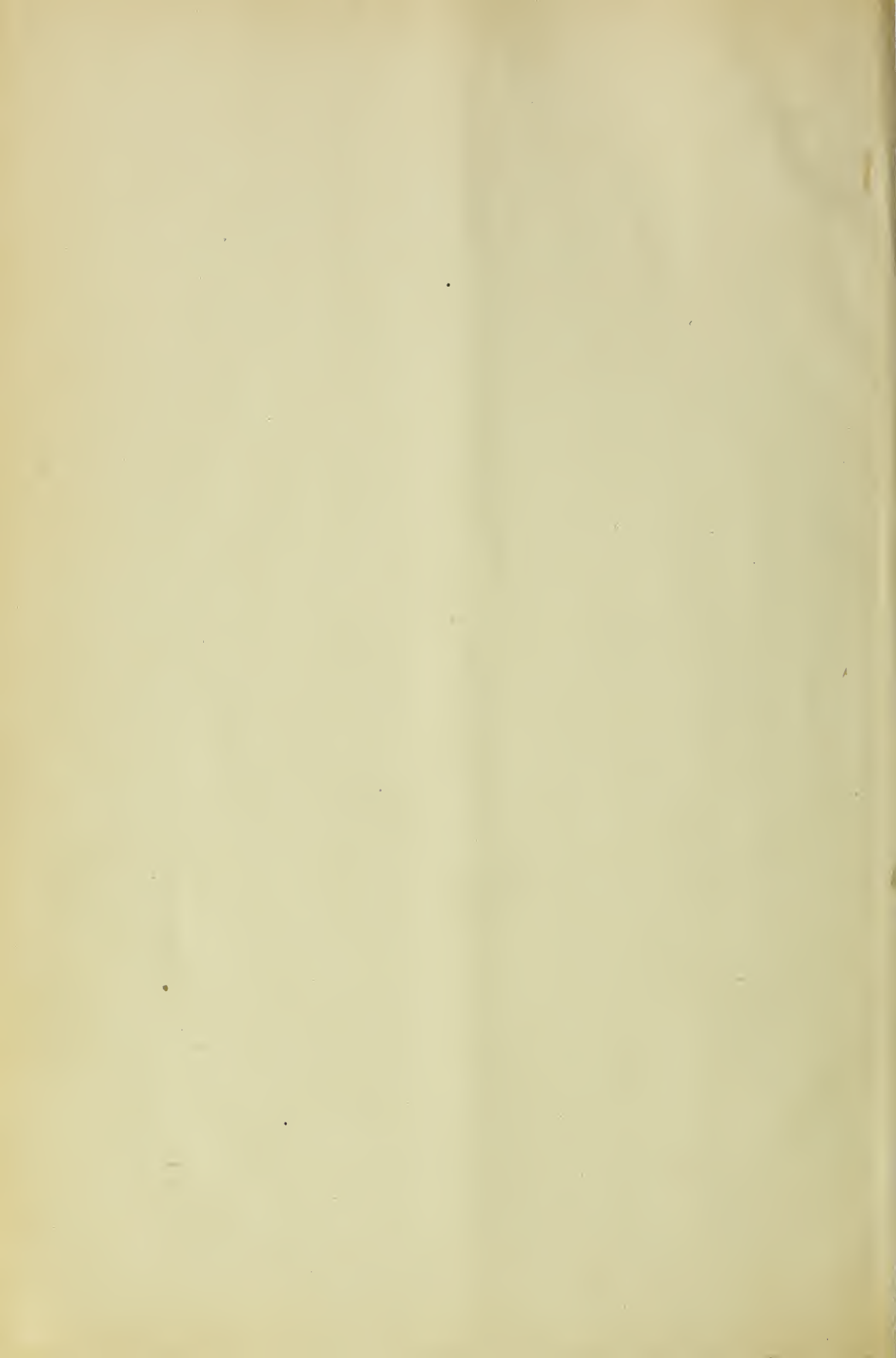


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Vol. IX.

OCTOBER, 1902.

No. 1.

THE AGRICULTURAL STUDENT



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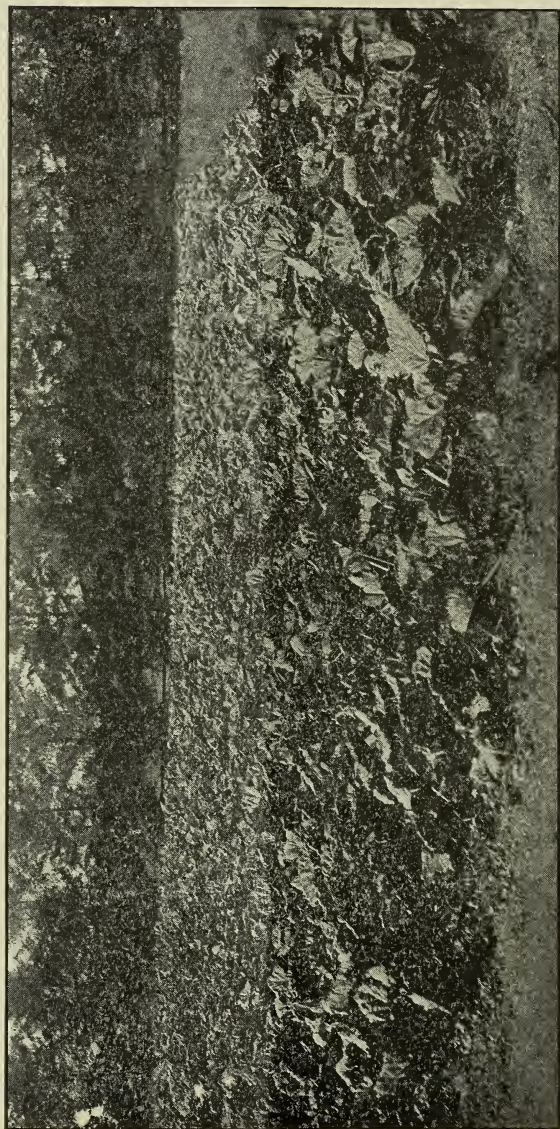
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Seedling Rhubarb—Seed Sown April 7, 1902.

THE AGRICULTURAL STUDENT.

VOL. IX.

OHIO STATE UNIVERSITY, COLUMBUS, ~~SEPTEMBER~~ ^{Oct.}, 1902.

No. 1.

TERMS OF SUBSCRIPTION:

One Year	\$0.50
One-half Year30
Single Copies05

While this magazine is published with the approval of the President of the University and the Officers of the College of Agriculture and Domestic Science, the editors are responsible for the statements in all unsigned articles.

Address all communications to the Business Manager, Agricultural Student, Columbus, Ohio.

Entered at the Post-Office, Columbus, Ohio, as second-class matter.

PUBLISHED MONTHLY BY

THE AGRICULTURAL STUDENT
PUBLISHING COMPANY.

M. F. MILLER Editor
VERNON H. DAVIS Business Manager



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With this issue The Student begins its ninth volume—the ninth year of its publication. Some changes are to be made in the make-up of the magazine during the coming year, although the general form will doubtless remain the same. Beginning with this volume, a June number will be issued instead of the September number, and each month's issue is to be in the reader's hands by the close of the month preceding. It is thought that this will be more satisfactory than the plan that has formerly been followed. It is also intended that the articles shall pertain more especially to the subject of agricultural education in general and to the advancement of the science of agriculture as a whole, than to the mere technique of agricultural practice. We hope that each number may be worthy of perusal by thinking agriculturists and appeal to the student body of the College of Agriculture and to the large number of graduates and ex-students for their hearty support.

The outlook for a successful year in the College of Agriculture was never better than it is at present. The cor-

respondence with prospective students this year has been unusually heavy and the demand for free scholarships large, so that indications at present point to a much larger number of new students than last year. The steady growth of the college is a cause for a feeling of gratification among those having the work in charge and there is no better evidence that the value of the work is being appreciated by the farmers than this steady increase in the number of students. With the present facilities for instruction and the enlargement of the corps of instructors, the opportunities offered to the young men and women of the state cannot fail to attract the serious attention of our progressive agriculturists, and it is hoped that they will continue to show their appreciation of the efforts that are being put forth by giving the institution their most hearty support. The college is for the farmers' sons and daughters, and we hope each year to see a larger number of them take advantage of the opportunities offered.

The spirit of the Agricultural Department of the University has always been one of expansion, and at no time has it shown a more marked tendency in this direction than at present. The Student takes great pleasure in presenting sketches of the two men who have this year been added to the instructional corps. Both men are known to be exceedingly capable and the Board of Trustees is to be congratulated on the wise selection as well as upon their good fortune in securing the men for the places in question.

The University as a whole and the Agricultural Department in particular cannot but profit greatly by the addition of such men, and the increased advantages that will be offered to students will go far in making this institution

what it is hoped to be—one of the most prominent agricultural colleges of the country for thorough agricultural training.

We are pleased to note the interest that the various agricultural papers are taking in the College of Agriculture, and the words of commendation which appear from time to time. A recent issue of the *Farm, Field and Fireside* contains a series of half-tones representing different features of the work of the department, one of which appears as a frontispiece. The support which the various agricultural papers are giving the agricultural colleges is resulting in great good, both in putting them in a proper light before the farmers and in reaching a great number of prospective students.

One of the most interesting and instructive exhibits at the State Fair was that made by the Experiment Station. Large numbers of varieties of all kinds of fruit were on exhibition and arranged in such a way that the visitor could compare and study them to the best advantage. Many of the results of experiments with vegetables, grains and fertilizers were on exhibition and were a source of much interest. The department of the Station's work evidently of most interest to the visitors, however, seemed to be that having to do with insects and diseases distinctive to plants. Professor Selby was constantly surrounded by a large crowd eager for some knowledge which would enable them to more successfully cope with these destructive and ever increasing enemies of the farmer and fruit grower. Just across from the Station exhibit was the University booth. Here President Thompson, Professor Hunt or Professor Decker could be consulted regarding the University and its work. The large

number of inquiries make it evident that the interest in agricultural education is rapidly spreading. The farmers and people in general are coming to appreciate and have more and more confidence in the wonderful work these institutions—the Agricultural College and the Experiment Station—are doing for agriculture and the country.

The address of Dr. True, delivered at the opening exercises of the Graduate School of Agriculture on the "Educational Values of Courses in Agriculture," has been issued as a University bulletin. The address is a masterly treatise on the subject and is worthy of the careful consideration of every thinking agriculturist. Eight thousand copies are available for distribution and may be had upon application to this magazine.

Closing Exercises of the Graduate School.

As the midsummer number of The Student went to press before the closing exercises of the graduate school, that important news item was necessarily omitted. President Thompson, who gave the address of welcome at the inaugural exercises, also gave a short talk at the closing exercises held in the lecture room of Townshend Hall, Friday morning, July 30. He complimented the officers of the school upon the success of the first session, and assured them that they would have the co-operation and best wishes of the Ohio State University in the future. Dr. A. C. True, dean of the Graduate school, gave a short resume of the work which had been accomplished by this first session and something of what the plan promised for the future. Dr. True spoke in the highest terms of the co-operation and interest manifest by every one

connected with the school, and referred especially to the co-operation given by the University trustees and president. He then turned his attention to Professor Hunt, who originated the idea of a graduate school, and with a few appropriate remarks in behalf of the students and faculty, presented him with a handsome gold watch as a token of their appreciation of his untiring and unselfish work in their behalf. The professor was taken entirely by surprise, but his usual composure soon came to his rescue and in a few words he thanked the students and instructors for their support, co-operation and token of their appreciation, and referred to the splendid work of Dr. True. The graduate school was then declared adjourned, every one hoping and believing that this was only the beginning in what was to mark a decided advance in agricultural education.

Perhaps no one thing has been more extensively commented upon during the past summer by the agricultural press than the Graduate School of Agriculture, the initial session of which was held at the Ohio State University during July. The fact that over one hundred persons, the larger number of whom gave up a hard-earned vacation, to attend this first session of the school, either as students or instructors, showed conclusively that there was a demand for such a move. These men came from thirty states and territories, the District of Columbia and Canada, many of them being men of mature years and wide experience. Some were recent graduates, just beginning their life work, and some were practical farmers who laid aside their work to learn more of their profession. The results cannot help but be evident to all. Instructors, experimentalists, students and farmers from all over the country have come together to study

some of the new problems of agriculture or some of the old ones more thoroughly. Results of past work have been compared and more careful and systematic plans made for the work to be carried on in the future. Everyone has received an inspiration and help from this personal contact with co-workers under various environments, and the results of their work cannot fail to make itself evident in class room and experiment station bulletins for years to come.

The only criticism we have heard on the graduate school was one, however, which was quite general and worthy of criticism. It was that too much time was given to strictly instructional work in the various branches of agricultural science and not enough time to the pedagogy of teaching.

Agriculture as a science is new and is conceded by all who are acquainted with it to be one of the most difficult to handle, pedagogically. It was natural, therefore, that those who are just beginning college work should desire to know something of the best methods of presenting their subject to students.

The beginner must necessarily formulate his methods as he goes along, making many mistakes which he might be saved by some such course as the above criticism suggests. While the teacher must have facts before he can meet a class successfully, he must present them in the proper manner to do the most good.

A suggestion that more time be devoted to the methods of teaching agriculture at the next session of the graduate school might be worthy of consideration.

The annual meeting of the American Association of Agricultural Colleges and Experiment Stations will convene in the senate chamber of the State Capitol at Atlanta, Ga., at 10 o'clock, Oc-

tober 7. Headquarters for those in attendance will be at the Kimball House.

Prizes for Students in Animal Husbandry.

Capt. V. T. Hills, of Delaware, the well-known breeder of Red Polled cattle, will, in October, hold a dispersion sale of his herd in Chicago. Recently Capt. Hills placed at the disposal of the College of Agriculture of the University the sum of twenty-five dollars, to be used as prize money in competition relative to animal husbandry. The suggestion is now made that this money be competed for by the students or former students in this department of the University through the writing of essays descriptive of Mr. Hill's herd. The following are the conditions:

Each contestant planning to take part in the contest must file a written statement to that effect with Professor Plumb on or before September 25, and the written essay not later than October 5. These essays must not exceed 2000 words in length and should be descriptive of the general herd and also of certain individuals of interest, including, for example, such features as the character of the stock, its derivation, importance of families, individuals of the breed represented in the herd, etc.

On or before October 10 the various essays will have been examined and the prizes awarded. The right is reserved to place at the disposal of Mr. Hills any or all of these essays to be published at the discretion of the examiner and Mr. Hills.

All essays must be written on one side of the sheet and due credit will be given for clearness of expression, good penmanship and accuracy of spelling.

It is to be hoped that this opportunity will result in an interesting competition

among O. S. U. men in animal husbandry. The field is an attractive one and it should profit all who go into the contest, even though the prizes be limited. The experience derived will certainly be of value.

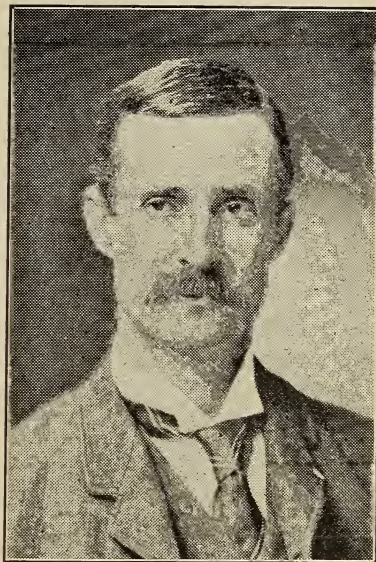
New Professor of Animal Husbandry.

At a recent meeting of the Board of Trustees, Prof. Charles S. Plumb, Director of the Indiana Agricultural Experiment Station and Professor of Animal Husbandry at Purdue University, was elected Professor of Animal Husbandry at the University, to begin his duties the beginning of this college year. It is the purpose of the institution to increase the efficiency of instruction in Animal Husbandry, and besides establishing a separate chair in this work an appropriation of \$2000 was made to add specimens of pure-bred animals to the present herds of the college.

Prof. Plumb graduated from the Massachusetts Agricultural College in 1882. He was associate editor of the Rural New Yorker from 1883 to 1884, and from the latter date until 1887 he was assistant director of the New York Agricultural Experiment Station. In 1887 he was elected professor of agriculture at the University of Tennessee and assistant director of the Experiment Station, where he remained until 1890, when he began his work at Purdue University. On July 1, 1891, he was made director of the Experiment Station and this in connection with his work in animal husbandry at the University, he has continued until the present year.

Prof. Plumb was the founder of the periodical known as Agricultural Science, which he published and edited until 1891. In 1889 he published a work known as the "Biographical Directory of American Agricultural Scientists,"

and in 1895 his well-known treatise on "Indian Corn Culture." Besides these he has contributed many monographs to magazines, live stock and agricultural



CHARLES S. PLUMB.

periodicals, as well as much material to experiment station bulletins and reports.

At the time he severed his connection with the Indiana institution he was President of the Indiana State Dairy Association, President of the American Cheviot Sheep Society, and Secretary of the Indiana Wool Growers' Association.

Through his work as Professor of Animal Husbandry and Director of the Indiana Station, Prof. Plumb has become well and favorably known throughout the United States, and comes to his new position with a preparation for his work that few men possess. He comes to us with a mature mind, abundant experience and a record as a teacher which make him most eminently fitted for the work before him. There is no greater cause for a feeling of gratification among those engaged in directing the work of the College of Agriculture than the fact

that the work in Animal Husbandry has been so largely increased in its efficiency.

It is hoped that the agriculturists of the state will appreciate the advantages offered in this line of work and that this appreciation will be shown, not only by a large increase in students, but in a furthering of the live stock interests of the state as a whole.

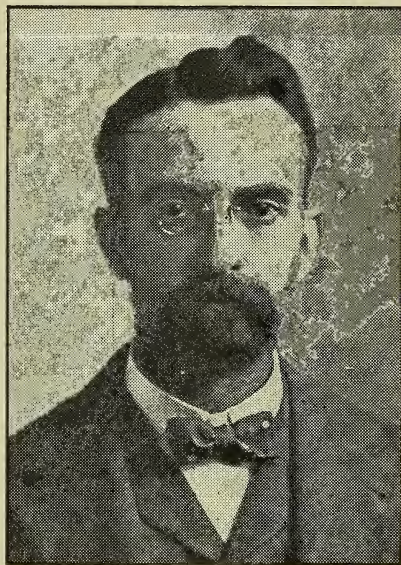
New Associate Professor of Agricultural Chemistry.

Alfred Vivian, the newly elected Associate Professor of Agricultural Chemistry, is a graduate of the University of Wisconsin, and has spent several years in that institution in the capacity of instructor, so that he comes to us well fitted for his work.

Professor Vivian graduated from the College of Pharmacy of the University of Wisconsin in 1894. In 1895 he was appointed instructor in Pharmacognosy in that institution, but the next year was made assistant in Agricultural Chemistry, which position he held for two years. In 1897 he was elected instructor in Agricultural Chemistry, remaining in this position until the present year. Throughout the time he was connected with the department of Agricultural Chemistry he was associated directly with Dr. Babcock of that institution, and in the famous cheese investigations which were conducted at the Wisconsin station by Babcock, Russell and Vivian, he had complete charge of all the chemical work. Prof. Vivian is therefore especially proficient in the various branches of dairy chemistry and in the investigations above noted a number of chemical methods have been reported by him individually.

In his work in the Department of Pharmacy at Wisconsin, he was for three years associated with Prof.

Kremers, the well-known organic chemist, and this, together with his work with Dr. Babcock, is sufficient proof of his experience as a chemist.



ALFRED VIVIAN.

During the past summer he acted as lecturer on Elementary Agriculture before the Wisconsin teachers' institutes and has spent considerable time as special lecturer before the farmers' institutes of that state. He has always maintained a keen interest in all matters pertaining to agriculture and has had much practical experience both in actual practice and in experiment station work. His father was a man much interested in agriculture and imparted much of his interest and knowledge to his son.

Prof. Vivian comes to us with the best of recommendations, not only as an instructor, but as a practical chemist, and we are certain that his long experience in both these capacities will be of great benefit to the College of Agriculture and to the University as a whole.

We are indebted to the Ohio Farmer for the cut herein presented.

The Dairy School.

State Fair Dairy Exhibit.

The Ohio State Fair of 1902 has come and gone. It was the most successful fair ever held in Ohio. Good exhibits and good weather brought large crowds in attendance each day. The dairy exhibit surpassed that of last year. The large refrigerator was full of butter and cheese. A. T. Sheldon, distributor of Sunbury creamery butter in Columbus made a fine display of butter in different sized packages. These were grouped around a cow made of butter. This exhibit kept a crowd in front of the glass continually. Isalay Bros., of Columbus, had a fine display of different kinds of cheese.

Oscar Reed, of Lebanon, O., butter-maker for French Bros., took first premium on both tub and creamery print butter. E. R. Minns, of Basil, O., made the tub of butter which took second prize. The second prize on creamery prints was divided among Otto Staub, West Jefferson; Ben M. Rutan, Marysville, and J. E. Robinson & Sons, Raymond, O.

George Purdum, of Hilliards, took first prize on both tub and print butter in the dairy class.

A. E. Helmer, of Evans Mills, N. Y., showed some very fine cheddar cheese, on which he won several premiums. B. B. Herrick, of Wellington, also took several prizes. Mr. Herrick showed a case of very fine Edam cheeses which were equal to the best imported Edams. The Diamond Cheese Co., of Vermillion, took first premium on Swiss cheese. The products were scored by Prof. Oscar Erf, of the University of Illinois.

On Thursday the Ohio Dairymen's Association met in the Assembly Hall of the Cattle Building. It was decided to secure two able speakers from abroad for the next convention, to be held in Columbus next February. It was also decided to hold a number of dairy institutes in December and to give instruction in cheese factories next summer.

The exhibits of dairy machinery at the Ohio State Fair were larger and better than last year. C. D. Vernon, manager for the Burnap Co., of Toledo (Sharpless machinery), built a fine booth 36 feet long, which was filled with separators and all kinds of machinery and supplies. In addition to this ten feet more of space, fourteen feet wide, was taken up with a squeezer churn, tread power and other things. In all, their exhibit covered about 650 square feet of floor space. A gasoline engine made the wheels go round.

The Vermont Farm Machinery Co., and De Laval Separator Co., also had extensive and fine exhibits. The Empire separator and the National were likewise there and made better showings than last year.

The Star Milk Cooler Co. and the Dairyman's Supply Co. each had fine exhibits covering over 300 square feet of floor space.

There were three good gravity creamers (not the dilution or delusion kind) from Bluffton, O., a lot of butter tubs from the Cardington Novelty Co., a fine insulated gravity creamer and refrigerator chest from Lafayette, Ind., a churn that would go of itself by pushing it just the least bit, etc.

An exhibit by the Ohio Dairy School included an exhibit of the constituents of milk, butter and cheese, in their proper proportions in glass jars. This exhibit attracted a great many people and many went away with a better idea

of these products. A creamery man in the northern part of the state ordered a set of these jars for exhibiting to his patrons. He said that he thought it would give them a better idea of the value of skim milk.

E. R. Minns, an O. S. U. student in agriculture, has been making butter for the past two months in the Twin City Elgin Butter Factory at Basil, O. The manager and buttermaker, Ed M. Kummeler, of the dairy class of 1902, injured his hand in the hay field and had to have a buttermaker during the time of the serious trouble with his hand. M. Minns had taken the course in dairying for long-course students last year and undertook the work. The second prize on his butter at the State Fair speaks for his success.

D. A. Crowner, assistant in butter-making at O. S. U., has been resurrecting a creamery at West Jefferson. At present he is receiving nearly 5000 pounds of milk per day. During the winter term of the University the creamery will be closed and the milk will be hauled to the dairy school.

Otto Staub, of the dairy class of 1902, is buttermaker for Mr. Crowner, the latter giving his attention to managing and building up the business of the creamery.

He has an equipment rarely seen in this part of the country. The milk is weighed into a receiving vat, from which it flows into a Ried Pasteurizer, where it is heated to 160 degrees F. From the Pasteurizer it goes through a Ried separator which handles over 3000 pounds of milk per hour and leaves less than .05 per cent of fat in the skim milk. The hot cream flows into a cream vat, where it is cooled and then ripened by the addition of a starter. The hot skim milk goes back to the patrons.

The cream is churned in a simplex combined churn and worker. We recently saw Mr. Staub work and pack a batch of butter from this churn. He worked it with ease and never once touched the product with his hands. The butter looked fit for a king.

Last year W. Z. Evans, of Delaware, started a creamery in a large stone warehouse across the street from the Big Four depot in Delaware. He is now receiving 14,000 pounds of milk per day. It is another illustration of how the dairy business is booming in the territory around Columbus.

Mr. Fred Ashman, a student of the Wisconsin Dairy School, has been employed as buttermaker in the new creamery at Vanatta, four miles north of Newark. His tub of butter at the Ohio State Fair took third place.

Cyclopedia of American Agriculture.

A cyclopedia of American Agriculture is the latest undertaking of Prof. L. H. Bailey, the well-known professor of horticulture of Cornell University. It will be remembered that only last year appeared the last volume of his Cyclopedia of Horticulture, the only complete work of its kind ever published, and this is to be followed immediately by a like work on agriculture.

In this new work Prof. Bailey is to act mainly as editor, the articles being contributed largely by men of authority in the various divisions of the work. The work is to consist of four volumes, volume one having to do with principles of agriculture, volume two with crops, volume three with stock and volume four with machinery and economics. A tentative synopsis of volume one has already been issued and consists of three parts. The first part will treat of the land, covering the subjects of soil, til-

lage, drainage, irrigation, farm manures and fertilizers; the second of climatology and the third of the lay-out of the farm, covering the subjects of agricultural regions, equipment and capital, farm buildings, country roads and adornment of farm premises.

The work will be carefully illustrated throughout after the manner of the Cyclopedia of Horticulture, the cuts being prepared especially for the work.

All who are familiar with Prof. Bailey's ability as a collector of facts and with his immense capacity for work, predict for the Cyclopedia a most complete success if his health will permit him to carry it to completion.

The work will be published by Mc-Millan & Co.

Ginseng.

American Ginseng (*Panax quinque folium*) is in the United States most nearly related to the little ground-nut or dwarf ginseng whose cluster of little white flowers we number among the beauties of spring.

Ginseng, when of flowering age, is a very conspicuous and easily recognized plant. It is about one foot high with a straight, smooth stem which divides at the top into usually three branches—the petioles of the compound leaves. These compound leaves have much the general appearance of the leaves of the Virginia creeper. They are composed of five stalked, sharply-toothed leaflets, the two outer of which are considerably shorter than the three inner ones. The flowers, appearing about the first of July, are greenish-yellow and clustered. The fruit is a cluster of about twenty two-seeded berries which ripen a brilliant crimson in September. The root is a large spindle-shaped perennial, often forked. The stem dying down each year leaves its scar upon the upper end of the root.

The Chinese ginseng (*Panax ginseng*) is but very little different from the American species. In 1716 a French missionary found ginseng growing near Montreal and some of the root was sent to China and having proved acceptable a flourishing trade sprang up, only to be spoiled in a few years by a lot of roots dug out of season.

About 1750 the plant was found in New England and New York and a flourishing trade again sprang up. The business of hunting "Sang" root soon assumed quite large proportions. In 1858 Wisconsin is said to have exported root to the value of \$40,000 and in 1859, \$80,000.

Ginseng ranges from Ontario to Georgia and from Maine to Arkansas, but now that this region has become fairly well settled and the dense forest shade so necessary to the existence of the plant in its wild state has become mostly a thing of the past, the exports are decreasing greatly. This decrease is made readily apparent by the following statistics (the export of cultivated root is as yet less than one per cent. of the total and so may be ignored):

Years.	Total Export, Pounds.	Price Per Pound.
1858 to 1868	4,343,519	\$0 88
1869 to 1878	3,932,868	1 10
1879 to 1888	3,577,330	1 84
1889 to 1898	2,238,334	3 34
1899 to 1901	506,166	4 79
1901	149,069	5 38

The number of pounds exported in 1901 was the smallest since 1871.

American ginseng ranks third among the four grades upon the Chinese market. The Chinese regard the root as having almost miraculous powers—both preventive and curative. The market classes or grades are quite largely determined by the element of superstition which enters into their belief in the properties of the root. Thus the first grade is that raised in the royal gardens.

There is but little of it on the market; it is used by the wealthy classes who pay \$50 to \$200 per pound for it. The second is that from Korea and sells at about \$25 per pound. The third grade—the American root—is most largely used, while the fourth grade—the Japanese root—is very little used; it is sometimes used to adulterate the other grades. Forked roots having a resemblance to the shape of a man command enormous prices, as they are supposed to have extraordinary properties.

The painstaking Oriental has cultivated the Chinese ginseng for centuries and relies upon it as a safe and profitable crop, and, inasmuch as the natural range, and the environment and local requirements of the Chinese and American species are very similar, it would seem strange if Yankee ingenuity could not solve the problem of the cultivation of American ginseng.

Early attempts at the cultivation of ginseng in the United States were failures, but as the habits and requirements of the plant were more fully understood its successful cultivation has been found to be not only possible but profitable.

The plant naturally grows in a loose, deep, rich and well-drained soil in moist and densely-shaded situations. Successful cultivators aim to comply as closely as possible with these requirements.

One method is to make a deep, loose and well-drained bed and enrich it with well-rotted stable manure or, better still, leaf mold from the woods. The bed is shaded by lath or brush screens a few feet above the bed, arranged to shut out at least half of the light. These may be removed and stored in winter. Shade from trees is advantageous, but in case of near-by trees a spade should often be run down around the bed to cut off such roots as might rob the plants of moisture or food. One man says

never plant ginseng within fifteen feet of cherry trees.

The seed is best planted as soon as ripe; a part of it will then likely germinate the next spring. If seed is permitted to get dry it will require at least two years to germinate or, indeed, not germinate at all.

Ginseng begins to bear seed when three years old and the seeds should be properly cared for at once. A plantation may be started from seed alone, but quicker results are obtained by planting roots one year after another and planting such seed as is borne. It should be somehow contrived to have seed to plant every year and thus avoid any "off" years in the crop.

In the United States roots attain market size in four to seven years. The four-year old roots may be dug and such as are too small to market may be replanted and allowed to grow another year. Roots tend to decrease in size and to become woody and dry after about the ninth year. Roots have been found with as many as sixty and sixty-five scars—marking as many years of growth—but they are always small and woody.

After digging for market the roots should be washed clean with a broom or brush and then dried as quickly as possible with a moderate heat. The shrinkage in weight is about two-thirds, but is less in cultivated than in wild roots.

An idea may be gained of what can be done from some figures given by Mr. George Stanton in the Rural New Yorker for January 8, 1898. It should be remembered, when looking over his figures, that prices have since then doubled.

Mr. Stanton obtained in 1895 30¼ pounds of dry root from 7½ 3x16 foot beds, amounting to \$161.00. (Small roots were not sold, but replanted.) In 1896,

from 3x11 feet were obtained 11 pounds of dry root, sold for \$60.00. In 1897, from 8½ beds, each 3x6 feet, 32 pounds of dry root were sold for \$165.00. He then had left 1505 seedlings and 1582 replanted roots.

In the face of both theory and facts it seems that an ordinary amount of patience, perseverance and care ought to enable any one to carry on the business of ginseng raising very profitably. No expensive equipment is necessary and a very limited amount of ground is sufficient so that the initial expense to one starting to raise ginseng is very low. It must be remembered, however, that good intentions and a knowledge of the principles of ginseng will not raise ginseng unless accompanied by prompt and careful work.

Those desiring further information along this line are referred to (a) Bulletin 16, Division of Botany, U. S. Department Agriculture, Washington, D. C., and (b) "Kain's Ginseng," Orange Judd Co., 1899. OTTO E. JENNINGS.

Professor William D. Gibbs.

Professor William D. Gibbs, professor of agriculture and director of the experiment station at the New Hampshire State College, has resigned to accept a like position at the Texas Agricultural and Mechanical College. Professor Gibbs is widely known throughout Ohio by reason of his former connection with this University, and a host of friends are glad to know of his advancement. His work in connection with the Student will be remembered by all its readers. He acted as its business manager for three years and the magazine owes much to his careful management and wise foresight.

The best wishes of the Student and of his University friends go with him to his new work.

Report of the Executive Committee of the Graduate School.

The preliminary report of the executive committee of the Graduate School has been completed and contains some very interesting items. When the proposition for the Graduate School was under discussion before the American Association of Agricultural Colleges and Experiment Stations, it was decided to make the school a co-operative enterprise of the association, providing the first session warranted its continuance. The committee reports that from the observations of its members as well as from the testimony of the faculty and members of the school, this initial session was a decided success and, further, considering "the number and character of the students, the variety and value of the instruction given them, the earnestness and even enthusiasm manifested by both faculty and students at the school, we feel sure that important and beneficial results will accrue to the institutions represented in the membership of the school as well as to the faculty and students in their individual capacities."

The total number of students in attendance was seventy-five, coming from twenty-eight states and territories, and the Province of Ontario. Twenty-seven of these were professors or assistant professors in agricultural colleges, thirty-one were assistants in the colleges or experiment stations and the Department of Agriculture, nine were students and eight were farmers.

The faculty consisted of thirty-five men, seven of whom were officers of the United States Department of Agriculture, twenty-six were professors in agricultural colleges and two were officers of the New York Experiment Station.

It must be very gratifying to the instigators of this plan to note the marked

success which has signalized this new feature in the development of agricultural education. The need of this line of work has been amply proven by the success of this session and the advantages that will accrue from the various sessions of the school as it shall convene from year to year cannot now be estimated. Agriculture is rapidly assuming the importance it deserves as a science and the marked success which has attended this first session seems to assure the future of this advanced line of work.

The opportunities for young men thoroughly trained in agriculture were never so good as today and the possibilities for thorough training are keeping pace with the needs of the times.

William M. Beardshear.

The death of William M. Beardshear, of the Iowa Agricultural College, which occurred August 5, removes one of the most prominent agricultural educators of the country, and inflicts an almost irreparable loss upon the Iowa college. President Beardshear was a leader among present day educators and was especially prominent in promoting all lines of industrial education. He was born near Dayton, Ohio, spending his early years in a district school and enlisting in the Union army at the age of sixteen. After the war he attended Otterbein University, from which he graduated in 1876, and later spent two years at Yale. He studied theology and after spending some time in the ministry in Ohio, accepted the presidency of Western College in 1882, where he remained until 1889, when he became superintendent of the Des Moines city schools. He exhibited such rare ability in these positions that he was soon called to the presidency of the Iowa Agricultural Col-

lege. During his administration the school has shown a wonderful development and it was largely through his wise direction and clear foresight that the institution has attained the prominence it holds today among institutions of its class.

President Beardshear was widely known in various phases of public life and at the time of his death was president of the National Educational Association, one of the greatest honors that can be bestowed upon a man in the educational field. He was a giant in intellect as well as in stature, and will stand out as one of the greatest friends the cause of agricultural education has ever known. His chief delight seemed to be in helping his fellow men and it is sad to know that his close attention to what he felt to be his duty was largely responsible for his early death.

Relation of Forestry to the Farmer.

BY PROF. H. C. PRICE.

The early pioneers who literally carved their homes out of the forests of Ohio less than a century ago regarded the trees as their greatest enemies. They knew forests only to destroy them. They were the barrier that held them back from the cultivation of the virgin soil that was to give substance to themselves and their families. Can we wonder that they were destroyed with a relentless hand? In their stead have sprung up cities and towns, farms and gardens. Cultivation has conquered wildness, the farmer has taken the place of the hunter, and the merchant the place of the trader.

But this ruthless destruction of forests has gone on till today we are face to face with the question of reforesting a

portion of our land, both for the supply of timber it will afford and the influence it exerts on our climate and rainfall.

What is the relation of the farmer to practical forestry? Some over-zealous enthusiasts would seem to advocate the extensive planting of forest trees, irrespective of the value and fertility of the land. But no greater mistake can be made, or teaching that will do more to delay the progress of practical forestry. By the individual farmer the matter of resetting cleared land to forests or allowing land that is already in forests to remain, must be considered from a financial standpoint. It must either yield an income sufficient to pay a reasonable interest on the capital invested, or else increase in value rapidly enough to make a profitable investment.

For years a timber famine has been predicted, but increased and cheapened transportation facilities have made new areas accessible, and it has only been in the last two or three years that timber has advanced rapidly in price, and this has been in harmony with the advance in all other kinds of building material. But this delay in the advance in price of lumber is no proof that our supply is not being rapidly exhausted. Our national government, realizing the importance of this matter, is taking vigorous steps through the Bureau of Forestry to have large tracts of land set aside as forest reserves, and to encourage the re-forestation of land that has been already cut off.

However, it is not the province of the average farmer to grow timber for the open market. It takes too long to mature the crop, and it takes too large an area on which to grow it. But every farmer should have enough timber growing to supply his own wants. He should have a home wood lot just as he has a home orchard, so that he may sup-

ply his own poles, posts, fuel and sawed timber when wanted. It need not take a large area to do this if properly cared for, but it must be cared for, and when a tree is ripe, having reached its maturity, it should be harvested. It is just as great folly to allow a tree to stand untouched when mature as to leave a field of grain unharvested. It is a false sentiment that says, "Woodman, spare that tree," irrespective of its condition.

It may be argued that it is cheaper to buy the timber and posts needed on the farm than to grow it, and it may be the case at the present prices, but we have no assurance that prices will not advance in the next twenty years, and the prospects are that they will increase very materially. Aside from what it would cost to buy the timber needed, the matter of convenience in having a constant supply at hand is of no small importance. It may be just as cheap to drive to the lumber yard and buy a load of posts as it is to grow them, but when we take into account the time lost in going to the lumber yard everytime we want a post or pole or a load of stove wood, we will find the home wood lot a very profitable investment.

But the income that a wood lot yields is not its only value. It will serve as a protection and as an adornment to the farm on which it is grown. In a prairie especially the protection that a wood lot affords from winds and storms is needed, but in any country a wood lot planted west and north of the farm buildings will be a welcome protection in winter.

The value of a wood lot for adornment is not measured in dollars and cents. But

"One impulse from the vernal wood
May teach you more of man;
Of moral, evil and of good
Than all the sages can."

When we find a country dotted with wood lots we find one that possesses natural beauty. The wood lot on a farm is the part that first attracts attention in a landscape. In the spring its early buds and blossoms welcome the wandering eyes. In the summer its varied tints of color and restless foliage invite us to its cool shade. In the fall, as its leaves take on their bright coloration it turns to one maze of glory with

"Tints that the maple woods disclose
Like opening buds or fading rose,
Or various as those hues that dye
The clouds that deck a sunset sky."

The trees that are found in the farmer's wood lot will depend largely upon the trees that are native to his section. If the wood lot is a natural one that has been preserved, it will necessarily consist largely of native trees. But if the trees have been planted it will consist of few varieties and these planted for specific purposes.

A few of the more common trees planted and the special use for which they are adapted follows:

FOR POSTS AND DURABILITY WHEN EXPOSED TO THE GROUND.

Black Locust (*Robinia Pseudoacacia*). One of the most commonly planted trees for post timber. It will grow large enough in twelve to fifteen years, and should be planted closely, six by four feet, allowing over 1800 trees to be planted per acre. It is subject to the attack of the borers, and should be planted thickly.

Catalpa (*Catalpa speciosa*). The Catalpa is very durable in contact with the soil. It grows rapidly and should be planted much more commonly in forest plantings. It is very subject to growing crooked when growing slowly, and often a better trunk can be obtained if

the tree is cut off at the ground early in the spring after growing three or four years, and allowing a sprout to be sent up and form a new trunk.

Chestnut (*Castanea dentata*). Where the chestnut thrives it makes a rapid growth. The wood is light and very durable when exposed. As a rule, it is not indigenous on limestone soils. Its range is rather limited.

Larch (*Larix europea*). The European larch is a rapid growing, deciduous conifer that could be included with profit in plantings, especially on moist land. The wood is durable and the tree adds beauty and variety to a planting.

Oaks (*Quercus Sp.*). The oaks of the white oak group bearing leaves with rounded lobes and maturing their acorns the first year are, as a rule, durable in contact with the soil. However, they are slow growers and hard to transplant, and for this reason are not planted to any great extent. But some of them should be included in a planting to furnish timber when the earlier maturing kinds are gone.

TREES FOR SAWED LUMBER.

Cottonwood (*Populus deltoides*). For making trees that are large enough to saw into lumber in a short time, the cottonwood has no equal. The lumber, when compared with hard woods such as oak, maple and ash, is very inferior. But for inside work and dimension stuff in building it is satisfactory and is being used largely throughout the middle west. The tree grows readily from cuttings and can be grown closely together.

Ash (*Fraxinus Sp.*). The different species of the ash make valuable timber when matured, and are fairly rapid growers. The wood is especially valuable where a tough wood is needed of medium weight. It also takes a good polish and is valuable for finishing purposes.

White Pine (*Pinus strobus*). The white pine is a rapid grower after it becomes established, and in the course of twenty or twenty-five years will make a tree large enough for lumber. The white pines, when included in a planting, will add greatly to its value as a protection from wind and storms.

Such slow growing trees as the black walnut (*Juglans nigra*) and wild black cherry (*Prunus serotina*), of which the lumber is too valuable to use for anything but finishing purposes, may sometimes be added with profit and will give variety to the planting.

The work of the farmer for forestry is first to supply his own wants. If he has waste land, set it to trees. There are thousands of acres of hill land in Ohio that should never have been cleared of timber, and the sooner they are reset to forests, the better. This society can do much to awaken an interest in this subject, and I hope will succeed in doing so.—Journal of the Columbus Horticultural Society.

A County School of Agriculture.

A prospectus has just been issued for the Marathon County School of Agriculture and Domestic Economy, of Marathon county, Wisconsin, which is to be formally opened October 6. The prospectus contains the following:

"This school is the first of its kind to be opened in America and its friends hope for it a prosperous and useful future. It is an effort to put into the school system professional training for the farmer. Its aim is to teach improved methods of farm management and to better the conditions of home life. In this, its initial year, it asks for the loyal support and patronage of the people of the county.

"The course for boys includes work in agriculture, treating of soils, plants and animals, including work in stock judg-

ing and animal husbandry; manual training, including work in blacksmithing, mechanical drawing, carpentry and rural architecture. The course of study for girls includes cooking, laundering, sewing, floriculture and home management and decoration.

"Besides this professional work there are two lines of work carried on by the academic branches. These include the elements of English composition, English literature, U. S. history, civil government, commercial arithmetic, with farm accounts."

This school, together with a similar one which is to open in Dunn county, Wisconsin, is the result of efforts put forth by the educators of Wisconsin to put agricultural instruction within easy reach of the young people of the state. The course, which is two years in length, is designed for boys and girls just out of the rural schools and is meant to reach those who might otherwise go no further.

While the course at present is somewhat restricted in its scope, the idea of the instigators is to make it ultimately what might be termed an agricultural high school. The one in Dunn county is established on the same basis and these two are the first of a large number that the state hopes to establish. The University of Wisconsin has been doing a great deal toward bringing agricultural education to the farmer, and this plan for introducing such instruction where it may be in reach of every young man and woman is but an outgrowth or development of this spirit of advancement. The attempt is being watched by educators with a great deal of interest and it is hoped that the plan will be eminently successful. It has long been realized that the vital need in agriculture was to reach the young people of the country, but the manner of doing this most effectively has been the question to be solved.

The University of Wisconsin has long held a foremost place in this matter of getting close to the farmer in agricultural work, and has succeeded in making itself felt among the educators in all lines, so it is not surprising that such advanced methods should have been initiated there. There is a vital need of some such method in every state, and if the plan proves successful it will bear the careful consideration of agricultural educators everywhere. It is not probable that the same plan would be successful in every state, and doubtless the people must be in a sense educated up to see the value of such a plan in any state, yet some such a plan should be adopted, and the fact that what may succeed in one place may not in another, should only add zest to our search for the most efficient means of introducing some such plan for advancement. Minnesota is developing a different method, New York is succeeding in still another and there should be no rational excuse for each state not seeking to develop some means by which this work may be extended. Let the educators of Ohio use every means in their power to show the need of the extension of agricultural education and spare no efforts in introducing such measures as shall bring the benefits of agricultural research and education within the reach of every young man and woman in the state!

Columbus Horticultural Society.

The Columbus Horticultural Society held its first meeting after the summer vacation Friday, September 12, at 2 p. m., in Townshend Hall.

SUBJECT: FORESTRY.

"Relation of Forestry to the Farmer."
H. C. Price.

"Trees for Roadside Planting, Shade and Ornament." W. R. Lazenby.

"Insects Affecting Forest Trees."
Herbert Osborn.

The meeting was well attended and considerable interest was manifest in the various reports of summer experiences. Prof. Osborn's paper on "Forest Insects" was well illustrated by lantern slides.

Field for Young Men.

The following clipping which appeared editorially in *National Stockman and Farmer*, was sent us by a man who has for some years been breeding live stock and who is constantly enlarging his farming operations. The italics are by this breeder, who wishes to emphasize the difficulty of securing the right kind of men for the management of stock farms:

BUSINESS OPPORTUNITIES.

"A field for young men that is growing broader as the interest expands in this country is in caring for and managing herds of pure-bred live stock. Many wealthy men have flocks and herds *and many more would have them if they could get the right kind of men to manage them and care for them.* This is no place for the young man who is afraid of work, doesn't want to learn, is careless, or is not willing to look upon his employer's interest as his own, and to devote himself to his business. More than that the ability to do well with stock is not altogether something that can be learned. A man's disposition and his inherent love for animals and instincts as to their wants count for much. On this account the field is not likely to be overcrowded. There are not many young men who fill the bill; but there are a good many who would with proper training. There are ways to get what education is lacking, and if the other qualifications are present the young man who is interested in live stock will make no mistake if he develops himself for this profession. The best judges of market live stock today receive more salary than any official of our government save the president; and they get it

because they are harder to find than men who are fit to become congressmen or cabinet ministers. There is room at the top, and a very comfortable berth for all who are able to get there in the live stock business in this country."

Corn Breeding.

A great deal of comment has been heard recently regarding the Corn Breeders' Association, established in Illinois, and the zeal with which these men are taking hold of the work, together with the results that have already been attained indicate that a marked advancement is to be made in corn growing within the next few years. The interest in this undertaking has spread rapidly and wide awake farmers throughout the corn belt are considering the matter of bettering the types of corn to meet the requirements of the various localities. The movement is a most important one and the results that are being obtained will be of great value. A pedigreed horse, a pedigreed cow and a pedigreed variety of corn are the signs of the times.

The University this season secured three of the most worthy varieties of white corn; a number of the best ears of each were selected and planted in an isolated spot on the best land of the University farm with a view to work along this line. The corn has done remarkably well and the present prospects for a successful carrying out of the plan are very good. The idea is to produce by careful selection and crossing a variety of corn that shall meet the needs of the University farm, and the work will be conducted with this end in view. It must not be understood that a type of corn can be developed that will meet the demands of different localities, although with a betterment of an individual type in one locality it would undoubtedly be better in a similar location.

The details of the process by which the desired results are secured are by no means simple, but require much time, care and patience.

A recent article in the Farmer's Voice and National Rural by F. A. Warner, secretary of the Illinois Seed Corn Breeders' Association, is worthy of consideration in this connection. It is in part as follows:

"Not every farmer has the time, patience and methodical habit necessary to be a corn breeder. Growing corn is not breeding corn. They are distinct avocations and breeding requires that the person to engage in it successfully be a man willing to devote time, a keen observer, a lover of the work for the pleasure of the solving of the difficulties connected with the breeding of corn.

"Breeding of corn is really 'fixing the superior qualities in yield, type and content of the best varieties suitable for the locality in which they are grown.'

"To obtain a large yield for a single year is not difficult, but to maintain such a yield requires something more than favorable condition of soil. To maintain a type of corn requires something more than the ordinary farmer's selection of seed. To grow corn specially adapted to produce growth in young animals, or to specially fatten matured animals with least waste and most profit is beyond what the ordinary farmer is expected to do or can do. For these reasons 'corn breeding' is special work. * * *

"Very little of our corn at the present time is pure bred, and there is no reason why pure-bred corn should not be as plentiful as pure-bred live stock. It is because we have not given it the same attention. To the ordinary grain farmer corn is only corn. An ear of corn, if it is large, suits him, although it may have an immense cob and short round grains and be deficient in several vital points. When he shells he has an immense pile of cobs of little value, yet costing him in loss of fertility of soil and his labor what might be profitable to both.

"The seed and the raising of the seed is the initial point and has the same effect upon successive crops that the

leader of the stockman's herd has upon succeeding generations.

"We have now and likely will have yet for a time the seedsman who advertises he has a 'drouth resisting corn' and another who has 'a no drown out corn' and a ninety day corn, etc., who will ship all orders from the same bin; but his days are numbered if the farmer will order his seed corn shipped in the ear.

"To engage in this particular work and to try to induce the farmer to pay some attention to his seed corn more than he ever has, is part of the object of the Illinois Seed Corn Breeders' Association."

Agricultural College News.

Prof. F. A. Waugh, of Vermont Agricultural College has been elected professor of Horticulture in Massachusetts Agricultural College, in place of Prof. Maynard, who has resigned.

Prof. E. E. Bogue has been elected professor of Forestry at the Michigan Agricultural College.

Prof. F. S. Johnston, of Purdue University, has been elected professor of Agriculture at the Texas Agricultural and Mechanical College.

Prof. D. F. Houston formerly of the Department of Economics of the University of Texas, has been elected president of the Texas Agricultural and Mechanical College.

Prof. Harry H. Hayward, professor of Dairy Husbandry at the Pennsylvania State College, has been elected to the same position in New Hampshire State College.

C. K. McClelland, O. S. U. '98, Cornell '01, has accepted the position of instructor in Agronomy at the North Carolina Agricultural and Mechanical College.

E. L. Shaw, O. S. U. '02, has been elected Assistant in Agriculture at the University of Missouri.

H. C. McLellan, of Cornell, has been elected professor of Dairying at the Agricultural College of New Mexico.

Prof. William Stuart, of Purdue University, has been elected professor of Horticulture in the University of Vermont, to fill the place left vacant by the resignation of Prof. Waugh.

E. P. Sandsten, Assistant Horticulturist of the Maryland Agricultural College, has been elected professor of Horticulture at the University of Wisconsin, to fill the vacancy left by the death of Prof. Goff.

C. P. Bull, assistant agriculturist at the University, has resigned to accept a like position at the University of Minnesota.

The University of Nebraska has instituted a four-year course in Forestry, which will open this year. The entrance requirements are the same as for the other four-year courses of the University.

James W. Wilson, son of Secretary Wilson, has entered upon his duties as Director of the South Dakota Station and will have charge of the work in Animal Husbandry in the college and station.

The general assembly of the State of Iowa has given the Agricultural College a one-fifth mill tax to run five years, which is expected to realize about \$600,000.

University News.

The new law building is almost ready for occupancy and a large addition, with some extra instrument buildings, are being added to the observatory.

The past season has been seasonable and the farm crops have done well. The gardens of the Horticultural Department are worthy of special mention in this respect.

H. L. Belden, O. S. U. '02, is with the Bureau of Soils, U. S. Department of Agriculture, working with Prof. King at Goldboro, N. C.

H. G. Beale, O. S. U. '02, has gone into partnership with his father in the management of his large farms near Mt. Sterling.

Albert E. Day, O. S. U. '02, is engaged in farming at Mt. Carmel, O., and is giving especial attention to the growing of fruit.

Miss Edna Perry has been appointed instructor in Domestic Science at the Dunn County School of Agriculture and Domestic Science, of Wisconsin.

Price E. Stahl, an ex-student of the College of Agriculture, has been employed at the Experiment Station for the coming year.

University Farm Notes.

Pastures are somewhat better than usual owing to a seasonable summer.

The wheat land is plowed and worked down ready to sow, and is in good condition.

The corn was not planted until late and was not ripe at the time of the first heavy frosts which occurred on the nights of September 14 and 15. Preparations had just been completed for filling the silo, which will hold about four hundred tons, and this will no doubt materially injure the corn for that purpose.

Frank Ruhlen will have charge of the farm again this year. Mr. Hamilton, who was foreman last year, will finish his University work. La Mott Ruhlen has been acting as foreman the latter part of the summer.

McLaughlin Bros., whose advertisement appears elsewhere in this issue, received the following message recently: "In heavy competition at Kansas State

Fair we won every first on Coachers and Percherons, and sweepstakes, all draft breeds competing."

This firm also won every first prize and sweepstakes, all draft breeds competing, at the Ohio State Fair, and also at the Iowa State Fair. The premiums at these three great state fairs were won with three different lots of horses. No horse winning at one fair was shown at another. Their horses owned in France have been equally as successful as they have been in this country. They won every prize given for Percheron stallions at the great annual show in France, and with the exception of one two-year-old stallion they won every first at the great Percheron show held in Montague.

Book Reviews.

POULTRY ARCHITECTURE. Compiled by G. B. Fiske. Published by Orange Judd Company, New York. 5x7 inches, 130 pages, cloth. Price, post-paid, 50 cents.

To meet the constantly increasing demand for information about the construction of inexpensive poultry houses, the author has compiled this book, his chief aim having been to give designs of sufficient variety to suit conditions everywhere. These plans have been carefully selected from a much larger number, and only those are given which are in successful use and which are adapted to the needs of practical poultry keepers. Some of them are extremely low in cost and adapted to the utilization of second-hand building material. Whenever desirable the list of materials is given, showing what to get and its cost. The leading chapters treat on location and methods; low cost houses; buildings for colony system; homes for farm poultry; bank and sod structures and extras; incubator and brooder houses; special

purpose buildings; coops, yards, fences, etc., etc.

POULTRY APPLIANCES AND HANDICRAFT. By G. B. Fiske. Illustrated, 5x7 inches, 130 pages, cloth. Orange Judd Company. Price, postpaid, 50 cents.

This neat booklet is intended to facilitate and ease the management of poultry on a large or small scale, and this in the most economical manner. By concise descriptions and clear illustrations, it presents many styles and kinds of the best contrivances in the line of nests, roosts, windows, doors, ventilators, home-made incubators, and brooders, traps for vermin, feeding appliances, fountains and water system, food machines, heating apparatus, besides scores of miscellaneous labor-saving devices. No one who keeps or intends to keep poultry can peruse these pages without advantage.

IRRIGATION FARMING. A handbook for the practical application of water in the production of crops. New edition, revised, enlarged and rewritten. By Lucius M. Wilcox. Illustrated, five by seven (5x7) inches, 500 pages, cloth. Orange Judd Company, New York. Price, postpaid, \$2.

Since the publication of the first edition of "Irrigation Farming," so many important improvements in irrigation have been made, and new and better methods been introduced, that in order to keep abreast with the times a new edition of this standard work has become a necessity. Realizing this need, the author has prepared this volume, which has been largely rewritten, entirely reset and considerably enlarged so as to present in systematic sequence and concise form everything pertaining

to the most modern irrigation methods and means, thus making it the most complete manual on the subject ever published.

As the author has devoted the greater portion of his life to practical irrigation work, and is the recognized authority on the whole subject of irrigation, from a practical standpoint, every statement made in this book is based on the best experience, practice and science, and may be unhesitatingly relied upon as absolutely true.

One strong position taken by the author all through the work is the importance of consistent and scientific cultivation in connection with all irrigation operations, as the one is just as essential as the other, and the two are indispensable in attaining the most perfect results. While the first edition was primarily written for and adapted to our western farmers and farms, this new edition also devotes appropriate attention to irrigation in humid regions. The principal chapters treat very fully of the advantages of irrigation; relations of soils to irrigation; treatment of alkali; water supply; canal construction; reservoirs and ponds; pipes for irrigation purposes; flumes and their structure; duty and measurement of water; methods of applying water; irrigation of field crops, the garden, the orchard, the vineyard and small fruits; all about alfalfa; windmills and pumps; devices, appliances and contrivances; sub-irrigation and sub-soiling; seepage and drainage; electricity in irrigation; winter irrigation; irrigation in humid regions; common law of irrigation; glossary of irrigation terms, etc., etc. The volume is profusely, handsomely and practically illustrated, and in paper, presswork and binding all that could be desired.



SOME FEATURES OF THE WORK IN THE DOMESTIC ART DEPARTMENT

THE AGRICULTURAL STUDENT.

VOL. IX. OHIO STATE UNIVERSITY, COLUMBUS, NOVEMBER, 1902. No. 2.

TERMS OF SUBSCRIPTION:	
One Year.....	\$0.50
One-half Year.....	.30
Single Copies.....	.05

While this magazine is published with the approval of the President of the University and the Officers of the College of Agriculture and Domestic Science, the editors are responsible for the statements in all unsigned articles.

Address all communications to the Business Manager, Agricultural Student, Columbus, Ohio.

Entered at the Post-Office, Columbus, Ohio, as second-class matter.

PUBLISHED MONTHLY BY
THE AGRICULTURAL STUDENT
PUBLISHING COMPANY.

M. F. MILLEREditor
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EDITORIAL CHAT.

The outlook for the year in the College of Agriculture is very promising. The number of students inrolled is 187, against 133 at the same time last year, which is a very substantial increase. The number in the four year course in agriculture is 77, against 49 last year, while the enrollment in the course in Horticulture and Forestry has doubled. In the course in Veterinary Medicine, the number is 82, against 47 last year, and there has been a substantial gain in both the short course in Agriculture and in that of Domestic Science. The four year course in Domestic Science is the only one showing no gain, there being 28, where there were 29 at this time last year. The total enrollment of the college for last year was 198, and this year it will probably be 250. The total enrollment over the present enrollment is largely due to students in the winter course in dairying, which includes about forty-five.

The total number of students last year in both Agricultural and Veterin-ary Colleges was 267, and it will prob-ably be 340 this year. The number of Freshmen in the four year courses in

Agriculture and Horticulture is fifty-four, a large increase over last year.

It is evident that agriculturists of the state are coming to appreciate the advantages offered, and this increase of students is very significant to those having the cause of agriculture and the good of the University at heart.

The large number of students entering Freshmen in the four year courses this year is a fact worthy of comment. It indicates plainly that a marked change of sentiment is arising regarding agricultural education among the people of the state, and that the need of such advancement in agricultural methods is becoming more apparent. This is the goal toward which educators in agriculture have long been working and it is very gratifying to see the fruits of their labor becoming evident.

To be sure, a part of this increase may be due to prosperous times, but it is not probable that it can largely be attributed to this cause. It is believed that it is sentiment rather than prosperity that is causing the change, and from now on we hope to experience a marked development along all lines of agricultural education, and a steady increase in the number of students who shall take advantage of the opportunities which the agricultural college offers.

The fact that the requirements for admission to the four year courses have been raised has had much to do toward influencing the character of the students who present themselves. Candidates are now required to present satisfactory credentials regarding their preparatory work, and the requirements are such as are usually possessed by high school graduates. The result is plainly evident in the manner in which such students grasp the work of the course since the thoroughness of a student's

preparation counts for half in his ability to do satisfactory work.

If this college is to be made what it is hoped that it soon will be—one of the foremost for thorough agricultural training—these facts are very encouraging; and while the country lad with incomplete preparation may be barred from direct entrance to the long course, yet it is not intended that he shall lose thereby.

It is believed that thorough training for one means better training for all, and the advancement of the science of agriculture as a whole.

We omitted to note in our last issue the appointment of P. J. Parrott as entomologist of the experiment station. Mr. Parrott was formerly assistant entomologist of the New York State station and has done considerable work under Professor Comstock at Cornell University. An insectary has been added to the equipment of the station and its opportunities for thorough work much improved.

We are in receipt of a recent publication on stock feeding and stock foods by The Glucose Sugar Refining Co., of Chicago. The pamphlet is pleasingly arranged, handsomely illustrated and should be of interest to every stock feeder. It is a fair and practical discussion on the value of nitrogenous foods, several reliable brands of which are manufactured by this company.

We have received a copy of the stock book of the International Stock Food Co., whose advertisement appears on another page. The book contains over 160 pages, and a large number of splendid cuts of noted individuals of every breed of livestock. Every reader can secure the book by simply answering the three questions mentioned in the

advertisement, and it will be found to be well worth the trouble.

Co-operation Among Farmers.

Those who are teachers and leaders in the intellectual development of the farmer, must realize that the economics of agriculture demand as much attention and study as the science of agriculture. The educational forces designed for the agriculturist should embody principles which will carry intelligent organization and co-operation much farther than it has done heretofore.

The difficulty of inducing the farmers of America to unite in any form of co-operative endeavor has been almost proverbial. Farming has always encouraged individualism and independence, and the restricted means of communication made union physically difficult among even those who might have been disposed to unite. Being so numerous and scattered, farmers are very much subjected to competition with one another in the disposal of their products. It is safe to say that no other class of producers is more at the mercy of middlemen. More or less isolated and generally short of capital, the farmer generally finds it difficult to reach consumers directly. Thus, without co-operation he is compelled to accept the services of the middleman, who infrequently pays cash, but sells for cash or on short time. By this method the capital for his operations is furnished mostly by the farmer who must also suffer in case bad debts are contracted. When produce is sold upon commission, heavy losses frequently occur from the dishonesty of the middleman, especially in regard to false reports concerning the prices received.

In recent years, the strongest men from among the rural classes have advocated union of effort among farmers,

but have met with only indifferent success. Among all efforts to unite the farming classes, the earliest and by far the most characteristic and successful is the Grange.

This fraternal society was organized in 1867, and has within itself, the capacity for satisfying a great need in rural society. It is based upon correct principles, foremost of which are education, organization and co-operation. Its membership consists of men, women and children, whose chief interests lie within the bounds of agricultural pursuits.

To enumerate the achievements of the Grange would be to recall nearly all of the progress of agriculture during the past quarter of a century. One of its greatest attainments, however, is that it has taught the farmers of America the value of coöperation and the power of organized effort.

Coöperation among farmers is now a matter of great economic moment to them. It has been estimated that the farmers are now maintaining in this country over five thousand coöperative organizations. These include principally coöperative insurance, buying of farm and family supplies, selling of farm products, elevators, warehouses, lumber and milling companies, cotton ginning associations, telephone lines and many hundreds of coöperative butter and cheese factories. Coöperation in creameries is so extensive and successful that economists regard it as having reached its highest type in this industry. In southern Minnesota large farming communities are engaged in the dairy business on a coöperative basis. In one county in 1899, there were nineteen large creameries on the coöperative plan governed by organizations similar to joint stock companies. The farmers instead of trading their milk

products at the store, now receive cash payments, and thereby can buy with more freedom, thus compelling the store keepers to keep a larger stock and better variety of goods.

In California the fruit business is almost entirely in the hands of coöperative "exchanges." There was a time when California fruit growers were competitors with one another. Their shipments were individual ones, and necessarily often in broken car loads. They paid exorbitant freight rates and were in almost complete ignorance as to the state of any but the local fruit markets. To overcome these difficulties, fruit exchanges were organized. For a few years these struggled weakly, but later gained strength, and today they control almost the entire fruit trade of the Pacific coast.

In all of the fruit growing parts of the country, the fruit growers have combined more or less for a similar purpose. They have done so in Florida, in the grape region of western New York, in Ohio, Michigan, Pennsylvania, New Jersey and other states.

The retail milk dealers of nearly every large city have formed associations for tempering competition and regulating prices to a paying basis. In the truck business also, we find similar organizations. This is especially true where the product is engaged to a canning establishment at a fixed price.

The greatest obstacle to coöperation has been the want of competent management, and the distrust aroused and maintained by the inefficiency and fraud of managers, and that the farmers do not generally recognize the actual importance of executive abilities, being unwilling to pay the salary actually earned by a thoroughly competent man.

It is true that coöperation among farmers has often resulted in failure,

but it has at the same time, especially recently, been unquestionably successful. Where successfully conducted, it tends to eliminate the services of the middleman, makes the farmer more of a capitalist, tends to make him save, cultivates his knowledge of business forms and methods, makes him more self-reliant, and perhaps most important of all, unites in one interest both capital and labor.

C. A. McC.

International Live Stock Exposition.

The program committee of the International Live Stock Exposition announce the following program for special events during the week of the grand exposition, which will no doubt prove of interest to intending visitors.

Monday, Dec. 1st, is designated as Agricultural Students' Day; Tuesday, Dec. 2d, Chicago Day; Wednesday, Dec. 3d, formal opening of the new building to be devoted to live stock and agriculture. It is hoped that M. J. J. Hill, president of the Great Northern Railway, will conduct the formal opening ceremonies, in which he will be assisted by the governors of several states who have signified their intention of being present. Wednesday is also Governors' Day. Ten or twelve governors have promised to attend. Thursday, Dec. 4th, is for railway men and the Live Stock Sanitary Board; Friday, Dec. 5th, Live Stock Association Day. A large number of National Live Stock Associations hold their annual meetings during the week in Chicago, so that a big meeting is expected. Saturday, Dec. 6th, in the forenoon, will be for school children, accompanied by teachers.

Observations on the Reclamation and Improvement of Soils.

Throughout the United States, wherever farming operations have been carried on for a long time, large tracts of land have been abandoned and given back to nature. This condition of affairs is particularly noticeable in New England and in the south, and has been occupying the attention of writers and scientists for a number of years. Being unable to compete with the rich western soils, the owners of these farms have long since abandoned them and moved into the towns or gone farther west.

Inquiry will reveal the fact that these soils were profitable and productive in the early years of their cultivation, but that they have slowly deteriorated until now they support but a scanty vegetation.

The cause of the deterioration of much of this land is ascribed to the exhaustion of the soil; the actual removal from the soil of the elements necessary for the growth of plants. But in the light of recent investigations it must be conceded that the exhaustion is due rather to a change in the chemical and physical condition of the soil than to the actual extraction of all the plant food originally contained therein. To be productive, a soil must yield at the proper time a supply of material in a condition available for the use of the plant. Chemical analysis shows the soil to be composed largely of silicates and difficultly soluble compounds of silica, alumina, soda, potash and lime, and it must be largely through atmospheric agencies that these are broken up and become available to the plants in the form of solutions in the soil.

A fertile soil must have this weathering take place at the proper time to

yield plant food for the growing crop, otherwise it will be as unproductive as though the food elements were actually absent.

Prof. Milton Whitney, chief of the Bureau of Soils, in speaking of the abandoned lands of the United States, and particularly those in the south, says:

"I have never in my experience seen a case in which one could say with any degree of certainty or even of probability that exhaustion was due to the actual removal of plant food. It is perfectly safe to say that the condition of the so-called worn-out soils in the South is due, not to an actual extraction of plant food, but to the chemical condition in which it now is, in which it is unavailable to plants, and that the restoration of the fertility of that land must be, not necessarily in the addition of plant food to the soil, but in bringing about such changes in the physical conditions or in the chemical combinations as will encourage that natural weathering of the soil which brings the plant food into a condition in which the plant can get its support."

The experience of Prof. Whitney is in accord with the results of the experiments of Lawes and Gilbert, which have been going on for the last half a century.

A crop of wheat grown continuously on the same plot without fertilization, has steadily fallen in yield from what it was at first, until it reached twelve or thirteen bushels per acre, and for the last twenty years the yield has been practically the same year after year except for a slight season variation, and according to present indications, this plot will continue to produce indefinitely this twelve or thirteen bushels per acre.

Adjacent plots have been made to produce, by means of fertilizers, thirty bushels per acre during this period. This leads us to the consideration of two characteristics in the production of the soil, the native fertility and the acquired fertility. The former represents what a soil will naturally produce under the ordinary course of weathering, and the latter what it can be made to produce by artificial means such as the addition of plant food in the form of mineral or vegetable fertilizers.

Lands upon which the natural yield has fallen so low as to render their cultivation unprofitable may be brought up to a state of profitable cultivation by the application of fertilizers and the employment of methods of cultivation that will tend to increase the natural weathering of the soil constituents.

In many of these abandoned eastern lands the cost of maintaining a good mechanical condition is so great as to make competition with western lands impossible.

The only way in which such lands can be profitably cultivated is to throw them out of competition with the western soils by the introduction of special crops, to the raising of which the soil is particularly adapted.

An example of this method of reclamation may be found in the Connecticut valley, where soils practically worthless for general farm crops, are being made to yield excellent crops of wrapper leaf tobacco, which is equal in quality to the best Samatra grown leaf, of which thousands of pounds are annually imported to this country to supply the demand for a fine wrapper leaf for cigars. In Florida, worthless sand dunes have been converted into splendid pineapple soils, which rank among the most valuable lands in the state.

The swamps of New Jersey and other eastern states are being made to supply the markets of the country with cranberries. The Bureau of Soils, through its soil surveys, hopes to reclaim much of the abandoned and at present worthless land by establishing thereon, special crops and introducing advanced methods of cultivation and management. In the near future we are destined to see more and more the gradual abandonment of general farming and the concentration of the energies of the farmers in each locality toward the production of crops particularly suited to the soil and climatic conditions of that particular section. Future generations will not rest content with making two blades of grass grow where one grew before, but will require that two blades grow where none grew before.

A. G. McCALL.

Veterinary Building.

Plans have been completed for the new veterinary building, and the work of excavation has already begun. The building is to be located 175 feet north of Townshend hall, and is to be used for laboratory and class work purposes only.

Clinical work will be carried on in the old Veterinary hospital, as formerly.

The building will be 96 feet front and 105 feet deep. On the ground floor will be the bacteriological preparing room, pharmacology laboratory, toilet, bath and locker rooms; janitor's room, an experimental animal room and a clinic room, 32x63 feet.

The first floor will contain a library and reading room, the dean's offices, a museum 28 feet by 40 feet, and curator's room. This floor will also contain part of the amphitheatre, which will occupy part of the ground and first floor. This

amphitheatre is to be furnished with raised seats, and is to have a seating capacity of one hundred students. The dissecting room is also on this floor, and is to be the most elaborately equipped room of its kind in the country. The floor is to be of a red-tinted cement, and the walls will be enameled brick to a height of eight feet.

A lecture room on the first floor is to be 19x28 feet. On the second floor is the bacteriological laboratory, 28 by 40 feet, and a pathological laboratory of the same dimensions. The private laboratory 12 by 19 feet, instructor's room 10 by 19 feet, two incubator rooms, and a private office 10x19 feet, complete the arrangement of this floor.

The building is to be built of light gray brick, and the roof will in all probability be tile.

Excavations have already been made, involving the old road, which will later on be shifted to the east, bringing it through about half way between the electrical laboratory and the new building.

The plans and specifications for the building were drawn by Professor Bradford of the University. N. D.

Jacob R. Dodge, the well-known statistician of the Department of Agriculture, died suddenly Sept. 30, at the age of 79. He has long been connected with the Agricultural Department in which he has done most commendable work. He was the originator of the present crop reporting system. The officers of the department passed resolutions of commemoration at a meeting Oct. 2, testifying to his ability and worthiness in all respects.

The Dairy School.

Ohio Dairymen's Association.

The Ohio Dairymen's Association will meet in Townshend Hall, Ohio State University, the second week in February. The work of the convention will be crowded into two days instead of extending over three days as was the case the past two years. This will bring all the three classes of dairymen,—buttermakers, cheesemakers and milk producers—to the meeting at the same time. In the past they have had separate days and have not come together as much as is desirable. If necessary there will be meetings of different sections in session simultaneously.

SPEAKERS.

Three great attractions in the way of speakers will be offered. Prof. G. L. McKay of Iowa, will score the butter and give a public demonstration in scoring. In addition he will appear twice on the program, one of these times with a stereopticon illustrating European dairying as he found it when traveling as an expert for the United States government.

Dr. L. L. Van Slyke, chemist at the Geneva, N. Y., experiment station, has carried on very extensive investigations in cheese making. He has agreed to be present and give at least two addresses on the chemistry of cheese making. Very fortunately for the Ohio dairymen, Prof. Alfred Vivian has come to the Ohio State University, fresh from investigations at the University of Wisconsin in cheese ripening and has consented to appear on the program.

THE PRODUCTS.

The products will be sent to the convention several days before the convention opens. The butter will go into cold storage long enough to harden the grain. Prof. McKay will score the products the day before the convention opens and the scores can be announced at the first session. In the afternoon of the second day the public scoring will occur.

Dairy Work at O. S. U.

The number of students taking dairy work this fall term at O. S. U. is twenty-seven. A gain of ten over last year. In addition there will be a class of twelve Domestic Science students taking dairy work for a short time later in the term.

The registration for the special dairy course which begins January 6 and closes March 24, is at the present time thirty-nine—twelve more than at the same date a year ago. The class is limited to fifty.

Prize Essay.

Announcement was made in our last issue of the prizes offered by Capt. V. T. Hills to the students in animal husbandry for the best essay descriptive of his herd of Red Polled cattle. The first prize was won by E. E. Finney, the second by C. C. Hatfield, and the third by C. C. Poindexter. The following essay was awarded first prize:

RED POLLED CATTLE.

The Red Polled cattle are the result of an amalgamation of two types of cattle which were raised in the counties of Norfolk and Suffolk, England.

The former of these which was the smaller, was usually of a blood red color, and was possessed of fair milking and beef making qualities.

The latter was more of a dairy type and was originally a sort of mouse dun color.

Some crossing of these two types had been practiced previous to 1846, but since that year they have been known as one breed.

The Red Polls were imported into the United States in 1873. They were improved by rigorous selection, good care and liberal feeding. The solid red grew in favor, and is now the standard color.

The improvers of the breed held as their ideal a grand combination animal. As a result of their industry and perseverance, the Red Poll of today is an example. It is above the medium in size, has a small, clean head and neck, fine clean bone, broad straight back, well sprung ribs, nearly straight underline, low hung, well-rounded, even quartered udder, with good-sized teats well placed, prominent branched milk veins and solid red color, with the exception that the tip of the tail and part of the udder may be white.

In this country the demand for good beeves and dairy products is rapidly increasing; in fact, the demand is greater than the supply, and the question which presents itself to every farmer is, how is he to realize the greatest profits in supplying these demands.

The native cow that is a good milker will seldom produce a calf that will make a good beef, and the specially bred dairy cow, while bringing in good returns in the way of dairy products, will never produce beef, and the cow of a special beef breed will barely supply her calf with milk.

While a cow of the dual purpose breeds, and especially the Red Polled cattle, will produce a calf that will make a first-class beef and at the same time yield a good flow of milk to the time of next calving, or if she is allowed to dry

up, she will readily fatten and make a good beef.

The Red Polls have finer bone than the beef breeds and most of the dual purpose breeds, yet they are by no means small. Mature bulls weigh 1800 to 2200 pounds, some up to 2400 and 2800 pounds. Mature cows weigh 1100 to 1600 pounds and will average 1200 pounds or over. They mature early and lay on flesh rapidly and evenly.

A feeding test was made comparing cross-bred Red Polled-Shorthorn steers and Shorthorn steers of the same age and under the same conditions. The Red Polled steers made a gain of 702 pounds each in one year, and only consumed 50 bushels of corn each; the Shorthorn steers made a gain of only 600 pounds each, and consumed 85 bushels of corn.

At the International Livestock Exposition, 1900, a Red Polled steer bred by Capt. Hills, age 3 years and 3 months, weighed at Chicago, 1715 pounds, and dressed 64.55 of his live weight and sold for \$6.99½ per 100 pounds.

At the Pan-American Exposition, in the model dairy, in which ten breeds were represented, the Red Polled banner was upheld by five cows from Capt. Hill's herd, which had been in milk 40 to 72 days, when the test began, May 1. They held fifth place in butter profits, following immediately after the Holstein and preceding the French Canadians, Brown Swiss, Shorthorn, Polled Jerseys and Dutch Belted.

They occupy the same position in solids and gain in weights, though the order of precedence differs. Counting churned butter, the Holsteins excel them in net profits for the six months' trial \$1.05. In total solids the Red Polls excel Jerseys 9 cents, and are excelled by Brown Swiss \$6.08. In solids and added weight the Brown Swiss ex-

celled them 55 cents, and the Jerseys fell behind \$4.89. If individual records are considered, Mayflower 2nd, of the Red Polls, held second place with a net butter profit of \$52.10, being excelled by only one Guernsey cow, Mary Marshall, \$59.41; the best Jersey had a net profit of \$50.24. The best cow of each of the other breeds had net profits as follows: Holstein, \$49.43; Ayshire, \$46.07; Shorthorn, \$43.01; Polled Jerseys, \$42.89; Brown Swiss, \$41.23; and French Canadian, \$40.63. The cost of producing one pound of butter fat for each of the three breeds claiming dual purpose character was Red Polls, 10.27 cents; Brown Swiss, 11.14 cents, and Shorthorns, 12.10 cents.

One of the largest and most enthusiastic of breeders and importers of this noble breed is Capt. V. T. Hills, of Delaware, Ohio, who has been vice president and a director of the American Red Polled cattle club for years. His fine stock farms are about six miles south of Delaware. Having sold one of his farms, he has decided to sell his herd of 108 head at Chicago, Ill., October 28 and 29.

Capt. Hills has been breeding Red Polled cattle since 1888, when he imported eight cows and the bull Pando, 1254. In 1890 he imported three cows and the bull, Wild Roy, 1105; and the bull The Ensign, 3096, in 1894. In 1900 he imported twenty cows and heifers and two bulls, Eyke Dandy and Columbus. He has also drawn largely from stock that has been imported as well as some that is home bred, among which was the home bred bull, Endymion.

Capt. Hills' aim has been to breed cattle that have good size and are well developed combination animals; also paying special attention to the dairy qualities. He secures individuals that

will nearest accomplish his aims regardless of expense.

On the whole, his herd displays grand constitutional vigor. Everything is in fine condition; there are no inferior animals in the herd, and it has not been pampered.

Stock of Capt. Hills' breeding are found in nearly every state in the union and two in Honolulu.

The animals bred by Mr. Hills brought the highest prices at the Dobler sale in March.

The imported bull, Eyke Dandy, calved 1897, is at the head of the herd. He weighs 2050 pounds, and is very smooth and compact. He has great depth and breadth, but is rather short.

Patriarch, calved 1899, is one of the herd bulls; he has a massive frame, with which he easily supports his 2450 pounds. He is of a strong combination type. The seven bulls under a year by him were a fine lot. The grand bull, Popular, was imported in his dam in 1900; he weighs 1500 pounds, is rather lighter in color than the other two bulls. He presents a strong dairy type, has a broad, straight back, fine head and limbs, a soft, glossy coat, and presents a very neat, handsome appearance, with a strong masculinity. He reproduces himself well in his calves, which will be sold with their dams. He certainly will make a noble sire.

The imported cow, Popsey 3rd, is one of the most typical Red Poll in the herd. She has a fine coat of deep cherry red; the tip of her tail only is white; her loin is broad and thick; heart girth is large, well filled in crops; ribs well sprung, flat and close together; fine head and neck well set on. Her udder is large, hung well under the body, evenly quartered and well rounded in front; the teats are well placed and of an even, desirable size; the milk veins

are very prominent and enter the body through two large wells. She is a very symmetrical animal, weighing about 1400 pounds. She has an official test of 57.4 pounds of milk in one day, testing 3.77% butter fat, and 8.89% other solids, or 2.16 pounds butter fat and 5.10 pounds other solids. In seven months she gave 7322½ pounds of milk testing 3.9% butter fat. Popsey 3rd has a bull calf at foot.

Capt. Hills has a number of the Mayflowers which have won him many prizes. Mayflower 3rd had for her dam Mayflower. She has an official test of 49 pounds of milk in one day, testing 4.63% butter fat, and 9.33% other solids, or 1.51 pounds butter fat and 3.01 pounds other solids. As a two-year-old she gave 6791¼ pounds of milk which tested 4.7% butter fat. She is now giving about 40 pounds of milk a day.

Mayflower 8th, by Endymion, and out of Mayflower 2nd, is a beautiful cow, and appears to be a promising milker.

Newmiss is an excellent heifer of the combination type.

The imported cow, The Nun, is a large one, and holds the milk and beef properties well balanced.

The cow, Havana, and heifer calf at foot have the beef properties predominating. Havana is the dam of the 1030 pound yearling steer that won first prize in his class at the International in 1901.

Capt. Hills' ten two-year-olds are a handsome lot; all are bred. They are growthy, well-developed individuals.

Last but not least are the seventeen yearling heifers which are of good size and excellent quality.

A few points in favor of the Red Polled cattle are that they are solid red in color and hornless, which qualities they will transmit to at least 90% of their offspring when bred to horned

cattle. They are very docile; they are a beef and a dairy breed in one, or in other words, they are dual purpose.

Rural School Agriculture.

The efforts being put forth in Minnesota for the advancement of agricultural education are worthy of commendation. In these efforts much attention is being paid to the introduction of agricultural instruction into the common schools, and Professor W. M. Hays of the Agricultural College has been placed in charge of the work. A bulletin is being prepared which is to be furnished to each school, and which is to contain about two hundred exercises and experiments having to do with work of this sort. It outlines exercises which the teacher is to require of pupils, at such times as may be convenient and practicable. The subjects include agriculture, horticulture, cooking, sewing, domestic animals, housekeeping, laundrying, agricultural chemistry, dairying, etc.

The state department of public instruction has employed W. Robertson, J. F. Wojta and J. A. Wilson to introduce the use of these exercises to the teachers in the teachers' summer schools throughout the state. In connection with these exercises reading lessons, charts and other helps are contemplated and the work is to be extended as seems best. The movement is of great interest to agricultural educators and if the plan proves successful it will doubtless do much toward bringing about advancement in methods of agricultural education in other states. Several states are considering the problem of rural school agriculture and although plans are slow in maturing much progress has been made. Rural school agriculture is undoubtedly coming and the efforts now being made are having their

effects upon agricultural educators everywhere.

Reunion of Agricultural Students.

At the last meeting of the Agricultural Students' Union it was decided to hold a reunion of former students of the College of Agriculture, and of those connected with the Union, at its next regular meeting which occurs January 14, 1903.

It was originally intended that one of the principal features of the work of the Union should be the holding of such gatherings, but notwithstanding this fact no such thing has ever been attempted. Such a feature successfully carried out would undoubtedly prove one of the most profitable with which the Union could be concerned, and it is firmly believed that the coming event will demonstrate this fact. Not only will it be of great value to the Union but probably nothing will do more to further the interests of the agricultural college as a whole than a frequent gathering together of students, ex-students and all those interested in its welfare for the renewing of old acquaintances, and the discussion of matters of common concern. Surely nothing would do more toward developing a practical working union than this and we most earnestly hope to see every graduate student and ex-student present at this meeting who can possibly arrange his affairs so as to attend.

The plans of the committee appointed to make arrangements for the event are in accord with the sentiment expressed at the last meeting and include a special program with two or more addresses of men of prominence in agricultural affairs, and a luncheon which will be served at a very moderate cost, the latter to be followed by short toasts and a general good time.

It is believed that such an arrangement will combine pleasure and profit to a pleasing degree and that all who attend will be amply repaid. The meeting is set for the week of the State Agricultural Institute and only the most exacting circumstances should prevent one being present. Every graduate and ex-student should begin making preparations for spending at least a few days of that week in Columbus.

Trees for Shade, Ornament and Road-side Planting.

BY PROF. W. R. LAZENBY.

The demands of a good shade tree may be grouped under four heads as follows:

- (1) An agreeable or suitable shade.
- (2) An attractive or pleasing appearance.
- (3) Hardiness, or freedom from disease and insect enemies.
- (4) Freedom from litter, disagreeable colors, etc.

First—The shade of different species or varieties of trees is not equally agreeable. Some trees make too dense a shade.

A heavy carpet or a thick blanket will make a shade, but it is not an agreeable one. Some trees give just such a shade. The horse chestnut is one and the catalpa is another. The head of these trees is too compact and the leaves too large to make a really pleasant shade. On the other hand the tops of some trees are too open and the leaves too small to make an ideal shade. The Jersey locust and the willow may be cited as examples.

So far as the question of shade alone is concerned a tree like the beech is nearly ideal. The leaves are well distributed over the whole top of the tree and are neither too large, nor too small, and the tree usually has wide-spreading

branches. The Norway maple is another good shade tree.

Second—Whether a tree is ornamental or not is largely a matter of individual taste. Taste is a personal matter and we cannot dispute it.

Whether a tree is ornamental or not depends largely upon its environment. In selecting ornamental trees we should always have regard for unity and harmony. An apple or a peach tree may have a pleasing appearance in the orchard or garden, but they are out of place on the lawn.

Third—Hardiness should always be taken into consideration in this climate. Many good shade or ornamental trees are not perfectly hardy in exposed situations. Some of our fine trees are liable to attacks from insects. In some localities the elm is a prey to the canker worm and is badly infested by the fall web worm.

The silver maple is sometimes seriously injured by the cottony scale.

These enemies can be kept in check, but the remedies are more or less expensive and troublesome to apply.

Fourth—The last point is one that should never be overlooked. There are trees with large leaves that begin to drop early and make a bad litter upon the lawn. The Carolina poplar is one of this class, so is the horse chestnut. Some trees have the bad feature of breaking and scattering twigs and small branches in every storm. Some of the willows are objectionable for this reason. The fruit of some trees is quite objectionable on the lawn. The horse chestnut, walnut and hickory are good examples.

The planting of roads, streets and avenues demands more formal treatment than the planting of individual shade or ornamental trees on home or public grounds.

Roads and streets are usually formal and artificial. Hence the planting is done in a more formal way. Here trees are planted in straight rows, but more than this is required. As far as possible for any one street the trees should be of the same species, of the same age and of uniform size and shape.

In all the street planting in this country how seldom these essentials are regarded. It is a rare exception to find an avenue of really good, uniform trees of one variety throughout.

The plan of planting some short-lived, rapid-growing tree between slow-growing and longer-lived species, is often recommended and has certain advantages. One disadvantage is that these trees are often left until the permanent ones are more or less injured.

The white, or American elm, and the silver maple are doubtless the most largely planted street trees in this country. They each have good qualities and also objectionable features.

The elm varies too much in shape and outline, unless carefully selected nursery stock is used, to make a really effective border for a formal avenue. The elm is easily injured by dust and drouth, and is often defoliated by the canker worm.

Although recommending the elm for street planting under favorable conditions, I believe it finds its most appropriate and effective place in parks and ornamental grounds, where uniformity of growth is not essential, and where the charming individuality of the tree can be seen to best advantage.

The silver maple will grow well where many other varieties fail. It is hardy, comparatively free from insects, has a clear-cut outline, and graceful foliage, which is not so easily affected by dust as that of the elm.

The sugar maple is an excellent street tree, where it will grow, but there are

many soils and situations to which it is not adapted. Among other trees that are often used with happy effect may be noted the linden or basswood, the northern magnolia or cucumber, the green ash, the yellow birch and the tulip or white wood.

For wide streets the sycamore is one of our finest trees. It is worthy of more consideration for ornamental purposes than it has hitherto received.

The following may be cited as among the best of our trees for street planting:

Ash—Green, blue, white.

Maple—Sugar, black, silver, Norway.

Beech—American.

Elm—White or American, European.

Oak—Red, scarlet.

Chestnut—American.

Cucumber or northern magnolia, sycamore, white wood or tulip.

Poplar—Lombardy, Carolina.

Honey locust (thornless), black walnut, red mulberry.

For narrow streets, where smaller trees should be used, the following are desirable:

Buckeye, ironwood, June berry, hardy catalpa, flowering dogwood, speckled alder, gingo or salisburia, sweet gum.—*Journal of the Columbus Horticultural Society.*

Alfalfa on the University Farm.

Having had a number of inquiries regarding Alfalfa as to how to sow to get the best stand and as to the growing crop, I take the plan of answering all through the columns of the Student.

One letter asks if it would be all right to sow on wheat in the spring and cultivate the wheat? To that I say, no. You might get a stand, but it is very doubtful.

The only way to sow and be sure of a stand is to make a thorough seed bed, sow on the seed and harrow it in or sow

it with a grain drill, putting the seed in front of the hoes. It is all right, and I think desirable to sow with about one half bushel or three pecks of oats, then cut the oats for hay when in blossom.

I will give our method of handling alfalfa from the time we consider buying until harvesting the first year. We get samples of the different grades of seed and give them germination tests. Two out of the three years we have sown alfalfa, the cheaper grade seed had a much higher percentage of vitality as to germination. One year the number one seed germinated only about fifty per cent., while ninety-five per cent. of the number two seed germinated. That is something of importance, as in sowing fifteen pounds per acre it means nearly as 15 is to 7 pounds of the poor seed. We hardly ever find any foreign seeds in alfalfa. We sow from 12 to 20 pounds per acre. Two years ago we sowed about 12 pounds, one year ago about 15, and last spring about 20 pounds, and we got a good stand every time, I think one time about as good as the other. I expect to sow about 15 pounds per acre hereafter.

After having thoroughly covered the field intended for alfalfa with manure, we plow it as soon as we can in the spring and work it down to as near perfect seed bed as possible. After we think all danger of a killing frost is past (say some time the first half of April in our latitude), we sow our alfalfa seed with the grain drill at the same time sowing three peck of oats per acre.

When the oats are heading out, cut them for hay; sometimes if the weather is favorable the alfalfa is as tall as the oats, and it improves the value of the oat hay. After cutting the hay crop we clip the alfalfa twice and let it fall back to the ground the first summer. Never pasture the first year. Next year it can

be pastured or mown for hay. We count on three hay crops of one and one-half tons per cutting. If it is early spring with plenty of moisture we get four cuttings.

This year we got three hay crops and a crop of two to four tons of green silage to put in with our corn. We put in twelve tons with corn alternating load about, or one load of alfalfa to two loads of corn, as the corn only weighed about 1500 pounds while the alfalfa weighed 3000.

As a feed, stock of all kinds seem to like it better than red clover. And as a pasture, have no more trouble than with red clover.

I pasture both, and never had an animal bloat on pasture. I think stock will get tired of it alone about as soon as they do of red clover.

With our three years' experience, we think it is a complete success on our soil, and would recommend any one having a rich, well drained soil to try alfalfa on a small area at first, then if successful, try it on a larger scale.

FRANK RUHLEN.

Meeting of the American Association of Agricultural Colleges and Ex- periment Stations.

The regular yearly meeting of the American Association of Agricultural Colleges and Experiment Stations convened at Atlanta, Georgia, October 7.

A large amount of business of much importance to agricultural colleges and experiment stations was transacted, and on the whole, the meeting was very satisfactory.

The following officers were elected for the coming year: President, J. K. Patterson, president of Kentucky Agricultural and Mechanical College, Lexington, Kentucky; first vice president,

R. H. Jesse, president of the University of Missouri; secretary-treasurer, E. B. Voorhees, director of New Jersey Experiment Station; members of executive committee, H. C. White, president of Georgia State College of Agriculture and Mechanic Arts; W. O. Thompson, president of Ohio State University; C. F. Curtis, professor of Agriculture at Iowa State Agricultural College and director of Station. H. C. White was elected chairman.

Among the important business transactions, several deserve special notice.

The Association instructed the executive committee to secure from congress an appropriation of \$60,000 if possible for the purpose of making an exhibit of the characteristic features of land grant colleges at the Louisiana Purchase exposition at St. Louis. A committee of nine was appointed to have charge of this exhibit.

The executive committee was also instructed to endeavor to obtain from congress, if it was deemed practicable, an increase in the appropriation for Experiment Stations from \$15,000 to \$25,000 annually.

A committee was appointed to co-operate with a similar committee of the Society for Promotion of Agricultural Science, and confer with the directors of the Carnegie Institution with reference to using part of the resources of that institution for promoting investigations in agricultural science.

The Association voted to continue the graduate school of agriculture and adopted a resolution authorizing the executive committee to assess the different institutions in proportion to their incomes, to defray the necessary expenses of the school, less the amount which should be advanced by the institution, at which the school should be held. It is understood that the next

session will be held in 1904, but the place has not been decided.

The recent action of the war department in increasing the military requirements at land grant colleges was discussed, and the executive committee was requested to confer with the war department regarding the matter. The opinion prevailed that the requirements should not be increased to such an amount as the department has ordered.

An amendment to the constitution was introduced which proposes a decrease in the number of sections into which the work is divided and a rearrangement whereby there will be but two, one having to do with college work and administration, and one with experiment station work.

The time and place of the next meeting is in the hands of the executive committee.

Soil Acidity and the Use of Lime.

The divisions of soils of the Agricultural Students' Union this year conducted a series of tests through various young men of the state, regarding acidity of soils, with the hope of determining in a general way the extent and location of acid soils in Ohio. Returns have shown that such a condition does exist to a greater or less extent in various parts of the state, and consequently there have been quite a number of inquiries regarding this condition and the best method of treating it.

The condition of acidity is one which results usually from a lack of drainage or from an excess of organic matter in the soil or naturally from both. The acid formed in the decomposition of organic matter is in such cases either formed in excess or is not allowed to be washed away, so that in time an acid condition, injurious to the growth of the

crops, may result. It is not always the low-lying land that is affected, however, but poorly drained upland soils, particularly those of a clayey nature, are especially liable to become sour.

The remedies that suggest themselves are drainage and neutralization of the acid by some compound such as lime. The former, while very important to the well-being of the land, is not such an immediate correction of the evil as the latter, although a combination of the two is most effective. Occasionally, too, soils are sour when natural drainage is fairly good, so that the use of lime or some such compound is almost invariably essential in correcting acidity.

The kind of lime to apply is the ordinary waterslaked lime and the amount necessary may vary from four hundred pounds up to three or four tons per acre. It is generally wise, however, to use small amounts at first, as with the ordinary commercial fertilizers, and to determine the result of such application before incurring large expense in cost of material.

Probably the most efficient method of applying the lime is to place the stone lime from the kiln in small piles over the field, cover with moist earth and allow to stand until slaked to a powder. It may be necessary, in case the soil is dry, to add one or two pailsful of water to each heap. When thoroughly slaked it may be spread from a sled, wagon or manure spreader. This method will probably give the most even distribution with the least inconvenience and the least discomfort from the flying dust. Quicklime or air-slaked lime would have the same effect as the water-slaked, although the former is much more energetic in its work and liable to injure young plants, while the latter is much weaker than the water-slaked lime in its action.

The best time for applying lime is in the fall, after fall plowing or when seeding down, and care should be taken to harrow in immediately after spreading. It must be remembered, too, that certain crops, as corn and rape may be injured by fresh lime, and that it is known to favor the growth of the potato scab. Millet, too, should not be sown for a couple of years after liming.

Besides the neutralizing effect of lime upon the soil acids it has other effects which are more or less beneficial to all soils when applied in a rationable manner. It is especially beneficial in giving a better tilth to heavy clays and has a more or less marked action in making available certain plant foods in the soil. Care must be taken, however, in liming light soils, as they are especially liable to be overlimed.

Agricultural College News.

Professor R. S. Shaw, son of Professor Thomas Shaw, of Minnesota Agricultural College, has accepted the position of Professor of Agriculture at the Michigan Agricultural College. He formerly held a like position in Montana.

English educators have been studying Canadian agricultural conditions, and it has been decided to establish a training farm for young men in connection with Berkhamstead school in Western Canada. If this is successful several others will be established in the Dominion.

L. A. Clinton, formerly Agriculturist at the Cornell Station has been appointed director and agriculturist at Connecticut Storrs Station.

Dr. R. C. Kedzie, for nearly forty years head of the chemical department

at Michigan Agricultural College, has retired from active service as professor emeritus, but remains in charge of the chemical work of the station.

F. C. Weber, assistant chemist at the Kansas Station, has accepted a position with the Bureau of Chemistry, U. S. Department of Agriculture.

B. C. Buffum has been appointed director and agriculturist of the Wyoming Station.

University News.

The present enrollment of the University is 1590—a large increase over last year.

Townshend Literary Society gave a reception to new students of the College of agriculture and Domestic Science, Friday evening, Oct. 17. A very large number were present and the evening was spent in getting acquainted. Dancing was indulged in until a late hour, the large museum room on the first floor of the building being used for this purpose.

Professor Hunt attended the recent meeting of the American Association of Agricultural Colleges and Experiment Stations at Atlanta, Ga., the second week of October.

Owing to the overcrowding of the general chemistry laboratories this year, desks to accommodate one hundred extra students are being placed in the agricultural chemistry laboratory. A large wing is in course of construction at the chemical building and accommodation of these students in the agricultural chemistry laboratory is but a temporary arrangement until the addition shall have been completed.

Professor Decker judged Jerseys at the Indiana State Fair, which was held

the latter part of September. Frank Ruhlen acted as judge of cattle and farm products at the Montgomery county fair at Dayton, this year.

Merritt Harper, a member of the class of 1901, has accepted the position of assistant agriculturalist at the University of Missouri. Mr. Harper took his master's degree from the University of Illinois last year, doing special work in animal husbandry.

The interurban system which is developing so rapidly about Columbus is of great practical value to the University. It is now possible to reach a great number of the best farms of the surrounding country with ease and slight cost, and advantage is taken almost every week of the opportunities offered. Several visits to stock and fruit farms have been made recently by the various classes.

The corn on the University farm being rather late was seriously injured by frost.

A number of tests have been made recently with the Deering corn shocker on the University farm. Considering the condition of the corn the work done was very credible.

The College of Agriculture was well represented in the stock judging ring at the Logan County Fair the latter part of September. C. B. Steward, a member of the class of 1900, now one of the leading breeders of pure bred stock of Fairfield county, acted as judge of the cattle and hog divisions. R. W. Dunlap, '95, well known as a breeder of livestock and as an Institute lecturer, awarded the prizes in the draft horse ring, and Frank Hamilton, who was foreman of the University farm last year and who is this year completing his course in the University, acted as expert judge of sheep and farm products.

The Graduate's Problem.

At this time of the year when the hundreds of colleges all over the country are throwing open their doors to receive the many young men and women, who are seeking after truth, the question comes, what is the magnetic force which is drawing this "hope of America" toward these centers of learning? What will be the result of four years training upon these thousands? Will they be better prepared to battle with the problems of life? Will they be able to raise the standard of living of the next generation?

These questions appeal to us as agricultural students, especially concerning the four thousand young men in the agricultural colleges of the country. What place are they to take, and what are they to do when they have completed their courses? This question is constantly entering the minds of those men who are nearing graduation.

At the present time, there are four lines of work which pertain directly to agriculture; first, work in the department of agriculture; second, work in agricultural schools or experiment stations; third, employment as editors of agricultural papers; and fourth, work in practical agriculture itself. The agricultural graduate must enter one of these four lines of work, or else take up something entirely foreign to agriculture. In making a study of the occupations of graduates of the College of Agriculture of the Ohio State Institution we find that from a number of nearly fifty, about twenty-four per cent are in government employ, twenty-eight per cent are professors and instructors in agricultural institutions, two per cent are in editorial work and thirty-four per cent are engaged in active agricultural pursuits. The remaining five per cent

are in pursuits which do not pertain at all to agriculture.

Students, as they enter college, may be classified in three groups according to motives. First, those who come with no special purpose; second, those who have a definite purpose, that being the upbuilding of self for a selfish purpose; third, those who have a definite purpose to train themselves that they may better serve some cause which they deem worthy of their attention. This classification may be applied to all of the students in our educational institutions, but we apply it especially to the students in agriculture.

In considering the forces at hand for the advancement of agriculture, we may take no consideration of the first class; for a man without a purpose can never be considered as a force in the advancement of any cause.

We must consider the second class as a factor in our cause, for men often in advancing their own private interests advance public interests also. This class of students in selecting their field of labor will select the one of the four given above which seems to them will best advance their own interests. This will differ with the taste and ability of the man. Some will enter the government employ because they think the work easier and fear to take up the work of practical agriculture on account of the fear of the ridicule of illiterate neighbors. Also some feel that practical agriculture is beneath them, forgetting that all movements in agricultural education are for the farmer.

The reasons of this class for taking up instructional work are similar to those above; also it may be because they desire the applause of the world. Almost identical reasons may be given why men engage in practical agriculture rather than in some other pursuit.

To this class of students we come with the plea that they consider well the cause of agriculture and its needs before deciding upon their life work. We

would not put up one of these four divisions of agricultural labor as of more importance than another. They are all important and they all need reinforcements.

As we look about and see that in the hands of a few lies the welfare of the world, it behooves us to consider carefully what we shall do. This statement, that in the hands of a few lies the welfare of the world, may seem exaggerated, nevertheless we believe it to be true. As the general prosperity of countries depends upon the prosperity of the agricultural classes, so the prosperity of the agricultural classes depends upon a few agricultural students, and whatever these students do to benefit agriculture is felt all over the world. Dean Swift well said: "He that maketh two blades of grass to grow where but one grew before is a greater benefactor of mankind than the whole race of politicians put together."

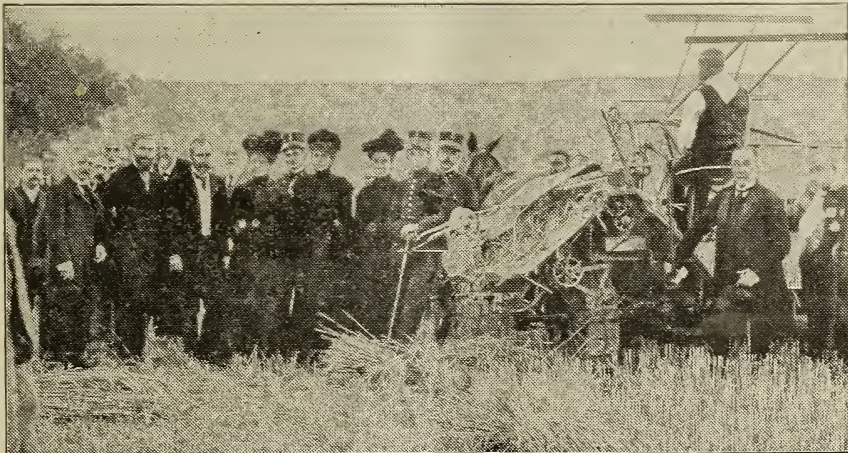
This is the reason that agricultural colleges have been established. This is the reason that the government is spending thousands upon thousands of dollars for agricultural investigations. We must keep in mind that the ultimate

aim of all our efforts must not be for ourselves but for the farmer and mankind. If the ultimate results of our labors come short of this we have failed and most miserably failed.

The words of Dr. True as regards the aims of the graduate school of agriculture are very appropriate as the aim of the agricultural colleges and their graduates. He says: "All of our labor will be counted as in vain, if it does not issue sooner or later in the growing of plants and animals better adapted to the uses of man, and the evolution of a system of farming in which the financial returns shall be more satisfactory to the intelligent and thrifty farmer, and under which the general level of intelligence, comfort and upright and harmonious living of our rural population shall be preceptibly and increasingly raised."

The work before us is a great one. It is a work which will require the very best that is in us. Are we willing to take it up? Shall we come to the front and select that work which will most help mankind or shall we shirk the duty and lose the benefit? This is the question which lies before the agricultural graduate of today.

M. O. B.



The King of Spain.

The young king of Spain is greatly interested in the agricultural development of his domain, and delights in investigating labor-saving farm machinery.

The king was greatly pleased with the demonstrations given by the Deering harvester and binder, and occupied the driver's seat on a Deering cultivator while his photograph was being taken.

The queen mother and many dignitaries of the court were present on this occasion.

Book Reviews.

AMERICAN HORTICULTURAL MANUAL.

In Two Parts. Part I, comprising the leading principles and practices connected with the propagation, culture and improvements of fruits, nuts, ornamental trees, shrubs and plants in United States and Canada. By G. L. Budd, Professor Emeritus in Horticulture in the Iowa State College of Agriculture, assisted by N. E. Hansen, Professor in South Dakota College of Agriculture. 417 pages, 107 figures. Cloth, \$1.50. John Wiley & Sons, New York.

Those interested in horticulture are to be congratulated that they are to have a book on the subject coming from the pen of a man so ripe in years of experience and observation as Professor Budd. Perhaps no other man has been more intimately connected with the horticultural development of the middle west. The second part of the manual will be devoted to systematic pomology, and inasmuch as both Professor Budd and his assistant, Professor Hansen, are well known for their work on the fruits of the country the appearance of that volume is looked forward to with more than usual interest. Part I is well written, and in the main the various subjects treated are well arranged and classified, and a large amount of information is brought up to date. We cannot escape the feeling, however, that the attempt has been made to cover too much ground in a small volume.

WILD LIFE OF ORCHARD AND FIELD.

By Ernest Ingersoll. Illustrated from photographs. Pp. 347. Price, \$1.40. Harper & Bros., New York.

Mr. Ingersoll, the well-known naturalist, has written a number of delightful papers about the birds and animals which may be found around any home outside of the city, even in the most thickly settled country districts, and well known to all. The author has

taken advantage of the fact that usually we are the most ignorant of the common things about us, and in his delightful way has given us a charming book on the wild life that is near us all. Every student of nature should possess *Wild Life of Orchard and Field*.

INSECTS INJURIOUS TO STAPLE CROPS.

By E. Dwight Sanderson, Entomologist and Associate Professor of Zoölogy, Delaware College. 295 pages, 162 figures. Cloth, \$1.50. John Wiley & Sons, New York.

As the author states in the preface, the book is a compilation from the widely-scattered sources of information concerning the insects affecting our staple crops. For the control of most of these insect pests the farmer must depend to a greater extent than heretofore on general methods of farm management rather than on any direct or specific treatment. To make such methods successful the farmer must have some knowledge of the habits, life history and natural enemies of the insect he is to combat, as well as the specific remedy to apply. This, the book gives in a clear and popular, yet scientifically accurate style. The remedies advised are usually determined by some peculiarity, either of structure or development of the insect.

We give the table of contents, and, for the insects considered, believe the information and advice will be found sound and reliable.

Contents: Injury Done Staple Crops by Insect Pests. Structure and Development of Insects. General Farm Practice Against Injurious Insects. Beneficial Insects. Insects Injurious to Grains and Grasses. Insects Injurious to Wheat. Insects Injurious to Indian Corn. "Weevil" in grain. Insects Injurious to Clover. Insects Injurious to Cotton. Insects Injurious to Tobacco. Insects Injurious to the Potato. Insects Injurious to the Sugar Beet. Insects Injurious to the Hop-plant. Insecticides.

